A CHILTON PUBLICATION

# The Iron Age

THE NATIONAL METALWORKING WEEKLY

May 24, 1951

CONTENTS PAGE 2

# Designed for Durability!

## Hoskins **Chromel***-equipped Electric Heat Treating Furnaces

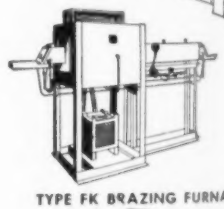
Take a good look inside any Hoskins Electric Furnace and you'll quickly understand why they're known for dependability. For beneath their sturdy rugged external construction . . . inside their heavy heat-containing insulation . . . you'll find that every one is equipped with long-lasting heating elements made of CHROMEL resistance alloy.

CHROMEL, you know, is the original nickel-chromium alloy that first made electrical heating practical. It's highly resistant to oxidation . . . possesses close-to-constant "hot" resistance between 700° and 2000° F., delivers full rated power throughout its long and useful life. And, as the most vital part of every Hoskins Furnace, it represents your best assurance of long-life satisfactory service.

So next time you're in the market for good, dependable heat treating equipment . . . equipment designed for durability, efficient low-cost operation, and the production of uniformly high quality work . . . you'll do well to get the facts on the Hoskins line of CHROMEL-equipped Electric Furnaces.

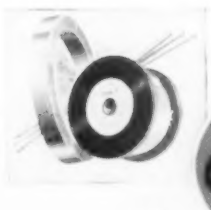
*Our Catalog 59-R contains complete information . . . want a copy?*

TYPE FR-251 BOX FURNACE



TYPE FK BRAZING FURNACE

TYPE OR-104 POT FURNACE



Chromel

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4445 LAWTON AVE. • DETROIT 8, MICHIGAN

NEW YORK • CLEVELAND • CHICAGO

*West Coast Representatives in Seattle, San Francisco, Los Angeles*
*In Canada: Walker Metal Products, Ltd., Walkerville, Ontario*

**the original nickel-chromium resistance alloy that first made electrical heating practical*

# When You Help THE SCRAP DRIVE You Help Yourself

We're addressing this message to the plant or shop boss who hasn't yet realized the full seriousness of the scrap shortage. While we don't like scare talk, the plain truth is that the steel industry *must* have more ferrous scrap than it's been getting in recent months.

Iron and steel scrap is a basic raw material in steelmaking. Much of it is "home scrap"—a by-product of operations at the steel mills themselves. But a huge proportion must come from outside sources—scrap dealers, for instance.

The dealers get it from you and thousands like you.

So, pitch in and lend a hand! You can *sell* ferrous scrap—and sell it today at possibly the highest prices ever offered. A scrap dealer near you will be glad to buy your old, rusting boilers, tanks, rails, beams, obsolete machines, and anything else that's iron or steel. "Junk," some would call it. But junk with a price on its head!

Gather it up; clean out all those heaps that are taking up space and doing no good! Call in the scrap man; sell him the stuff! He'll see that it's processed and fed to the steel mills.

***Remember,*** **scrap means money for *you* . . . there are buyers waiting with cash *right* now.**

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

**BETHLEHEM STEEL**

BETHLEHEM STEEL

**For names of local scrap dealers, consult the yellow classified pages of the telephone directory.**

# IRON AGE

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# IRON AGE *summary*

*iron and steel industry trends*

**Defense tempo quickens . . . Material needs lead tank, plane production . . . Metal controls bite deeper . . . CMP may become closed-end.**

**Gaining Speed**—This week all signs point to a faster tempo in industry's part of the defense effort. Although major programs such as tanks and planes are still several months from high production, their material needs are being scheduled and produced now. This is due to the long lead time required for some parts.

For example, a producer of tank treads will require a lead time of about 6 months for steel. This includes delivery of steel to the forging subcontractor, fabrication of the part by another subcontractor and final assembly at the prime contractor's plant. Another example is certain jet engine forgings, where lead time is as much as 9 months.

**Why Lead Time?**—Long lead times such as these partly explain why metal requirements are expanding so rapidly while actual defense output and subcontracting are lagging far behind procurement authorizations. Reorganization or expansion of defense production facilities and tooling are also important factors contributing to the lead time gap between letting of contracts and production.

Metal producers and users have been notified that defense and essential programs will soon be taking a much larger bite of current output. Most were surprised at the speed with which the majority of steel, aluminum and copper output has been brought under controls.

**Government Hurries, Too**—NPA now seems determined to speed full operation of CMP as soon after July 1 as possible. July set-asides of programmed steel have been boosted sharply and manufacturers of nonessential goods have been warned of deeper cuts to come. Defense Production Administration has been determining requirements faster than had been expected in the face of steel requests totaling about 135 pct of expected production.

**Conservative Statement**—In spite of heavy squeezing of requests, it now appears certain that the portion of steel output scheduled under CMP will be larger than government officials had expected. If anything, THE IRON AGE prediction of several weeks ago that only 25 pct of the steel market would be "free" by the fourth quarter is conservative. Nonessential users may be fighting their procurement battles in an even smaller free market sooner than that.

Actually, the steel market is approaching the 75-pct-control, 25-pct-free ratio now. For example, here is the picture today with one large steel company: Set-asides for defense and essential programs equal 57 pct of total output. Requirements for its own maintenance repair and operations and construction of new steelmaking facilities equal 10 pct. That leaves only 33 pct of output for nonessential customers.

**Change of Heart**—The new DO set-asides for July have forced some companies to virtually eliminate July tonnage for unclassified consumers. Mill space thus made available will be used to take care of added DO requirements of customers, some of whose DO orders were extended into 1952.

The rapid spread of controls over steel distribution is causing some steel executives to change their thinking on open-end CMP. Previously most had favored the open-end system which is to begin July 1. But, now that it is becoming apparent little free tonnage will be available, many of them now favor a closed CMP. Since free market tonnage will be so small, they feel tickets might as well be issued for that too.

Steelmaking operations this week are scheduled at 103.5 pct of rated capacity, down half a point from the previous week.

**(Nonferrous summary, p. 142)**

# How would you weld this

# EVERDUR BEER "POLISHER"?

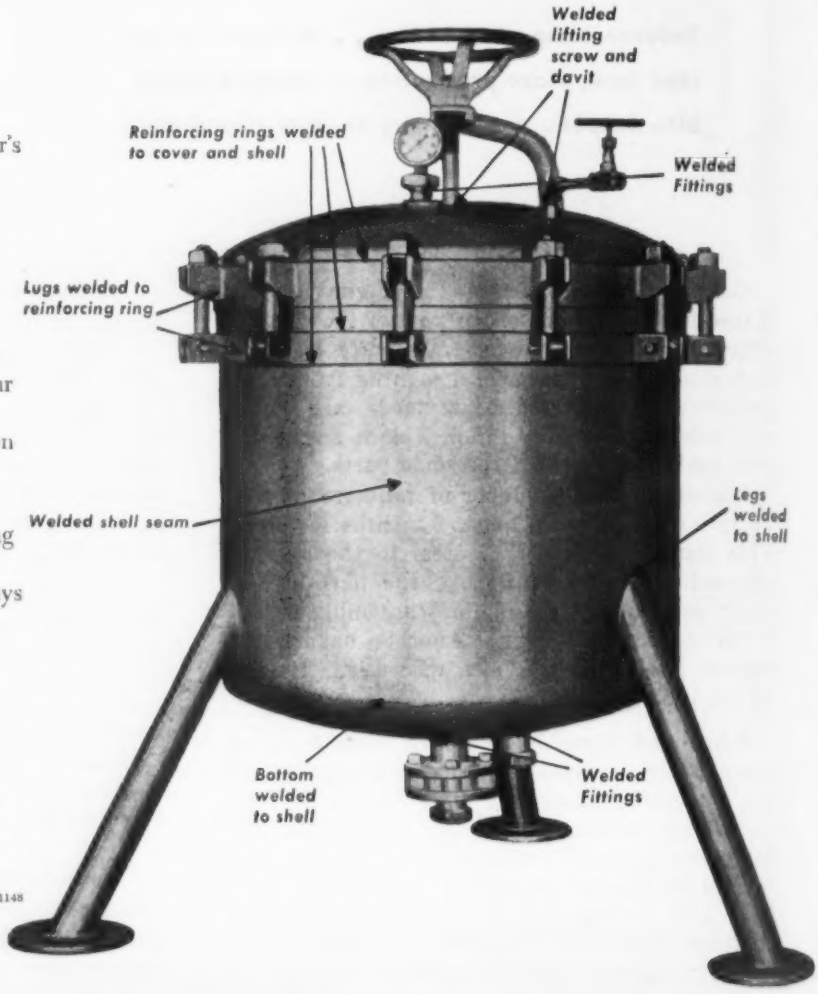
A beer "polisher," by the way, is the brewer's name for the filter that makes his beer so crystal clear. This polisher is made of EVERDUR,* an ANACONDA Copper-Silicon Alloy, by the Sparkler Mfg. Co. of Mundelein, Illinois.

This entire Everdur polisher was manually welded with inert-gas arc and ⅛ in. Everdur Rod. All welds were easily made and completely satisfactory, including those between Everdur and a reinforcing steel plate.

There's a correct ANACONDA Bronze Welding Rod for nearly every weld and welding process. Our Technical Department is always ready to help you on any bronze welding problem. And if you don't already have a copy of Publication B-13 on ANACONDA Welding Rods, write for it now.

ANACONDA Welding Rods are sold by distributors throughout the United States. The American Brass Co., Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

*Reg. U. S. Pat. Off.




*Inert-gas arc welds the longitudinal seam of the body, which is formed of Everdur sheet.*

*One-half inch thick Everdur reinforcing ring being fillet-welded to body.*

*Welding similar reinforcing ring to Everdur cover.*

*for every braze-weld, there's an* **ANACONDA®** ***bronze welding rod***

# *machine tool high spots*

*sales inquiries and production*

*by W.A.Lloyd*

**Inconclusive Meeting** — Prospects for a speedy solution to the industry's price problem were dubious this week following an inconclusive meeting of the industry's task force and OPS officials in Washington.

Another meeting has been tentatively scheduled for the current week. Meanwhile, the bulk of the industry is assembling price information to file under CPR-30.

**Deadline Extension** — On the optimistic side, there is a persistent rumor that the effective date of CPR-30 will be extended beyond May 28, if for no other reason than that a number of industries, including the chemical industry, cannot get the information together in the time allotted.

Fundamental argument, from an industry point of view, is the selection of a base period adequate for operating and profit margins.

**Slight Decline** — Machine tool shipments in April declined fractionally from the March level. National Machine Tool Builders' Assn. reported a preliminary index of April shipments of 154.8, compared with an index of 158.8 for March.

**A Kind Voice**—Machine tool builders were given moral support this week from one of their biggest customers, General Motors Corp.

T. H. Keating, GM vice-president and general manager of Chevrolet Motor Div., called for a better understanding of the machine tool industry's role in rearmament at a luncheon meeting in Cleveland, which officially opened a 2-day open house at the Chevrolet-Cleveland transmission plant.

**Why Delay Now?**—In a slap at present Washington mobilization planning, Mr. Keating recalled that 11 months before Pearl Harbor machine tool industry preparations were crystallized.

"Faster pace of machine tool manufacture must come first, if the defense program is to be accomplished on schedule," Mr. Keating warned.

Many machine tools still have to be ordered for defense contracts which have recently been let, or are still to be let in 1951, he pointed out. When this load is added to the backlog, the delay in deliveries may be substantially more.

**Money for Pool**—Future of the pool order program appears to be in the hands of the Bureau of the Budget, where NPA has filed a request for about $350-million to continue the program. If granted, this would bring the total to $450-million, the figure originally set by former Defense Production Administrator William H. Harrison.

Informed sources are guessing that eventually 65 pct of the machine tool industry will get pool orders. Estimates of the total size of the program vary widely.

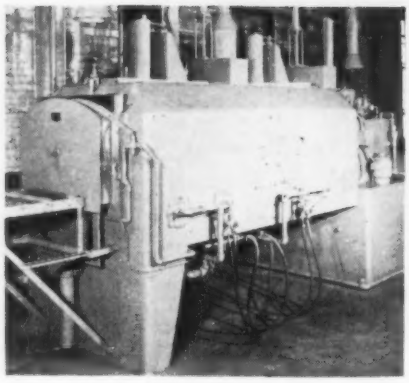
**Priority for Metals** — After months of material shortages, acceleration of machine tool production appeared to be a certainty as NPA assigned the industry a priority, DO-75 (originally assigned to mining machinery), which will enable machine tool builders to get more steel, aluminum and copper in the third quarter than they got in the first. (THE IRON AGE, May 17, 1951, p. 112.)

Under NPA's M-61, producers of machine tools and certain types of related equipment can write third-quarter DO-75 ratings for 140 pct of the iron and steel, 130 pct of the copper and 125 pct of the aluminum they used for each of the tools or related equipment items in the first quarter of 1951.

**Machines for France** — The French government wants to buy about 1000 U. S. machine tools, valued at an estimated $20-million under MDAP. Ratings on these machines have been requested, but deliveries will stretch into 1954.

# NEW *equipment*

**new and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on the opposite page.**



## *Bright production heat treating furnace*

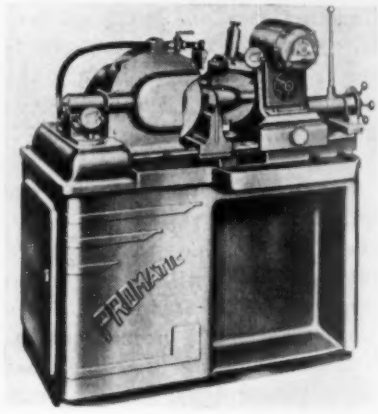
A fully automatic and controlled atmosphere unit for bright production heat treating is rated at 600 lb per hr. The unit is designed for bright carburizing and bright carbonitriding; straight heat treating or annealing can likewise be performed with maximum efficiency. Two independently controlled heating zones sealed to a combination cooling chamber and quench tank comprise the unit. The work is automatically loaded, transferred and quenched. The furnace can be gas or electric. The cooling chamber is water jacketed with automatic temperature control. The quench tank has built-in oil heating and cooling coils; when insulated can be used for martempering. *Ipsen Industries, Inc.*

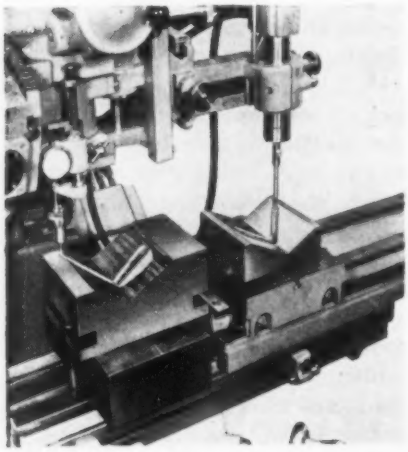
**For more data insert No. 1 on postcard.**

## *Small centerless grinder for average work*

The Promatic No. 1 centerless grinding machine features extra heavy duty alloy steel spindles mounted in pre-loaded, precision, anti-friction bearings. Exceptional rigidity throughout assures close tolerance finish and long life. Main castings have built-in sturdiness; spindle housings are of exceptional size to insure vibrationless operation. The regulating wheel has infinitely variable speed of 35 to 350 rpm with a micrometer dial graduated in 0.0001 in. for accurate setting of the wheel. A constant pressure dressing device assures accuracy in contour-forming. Both wheels are dressed from a single template. Capacity of the centerless grinder is 1¼ in. maximum stock diameter. *Diversified Metal Products Co.*

**For more data insert No. 2 on postcard.**





## *Reverse image attachment for vertical mills*

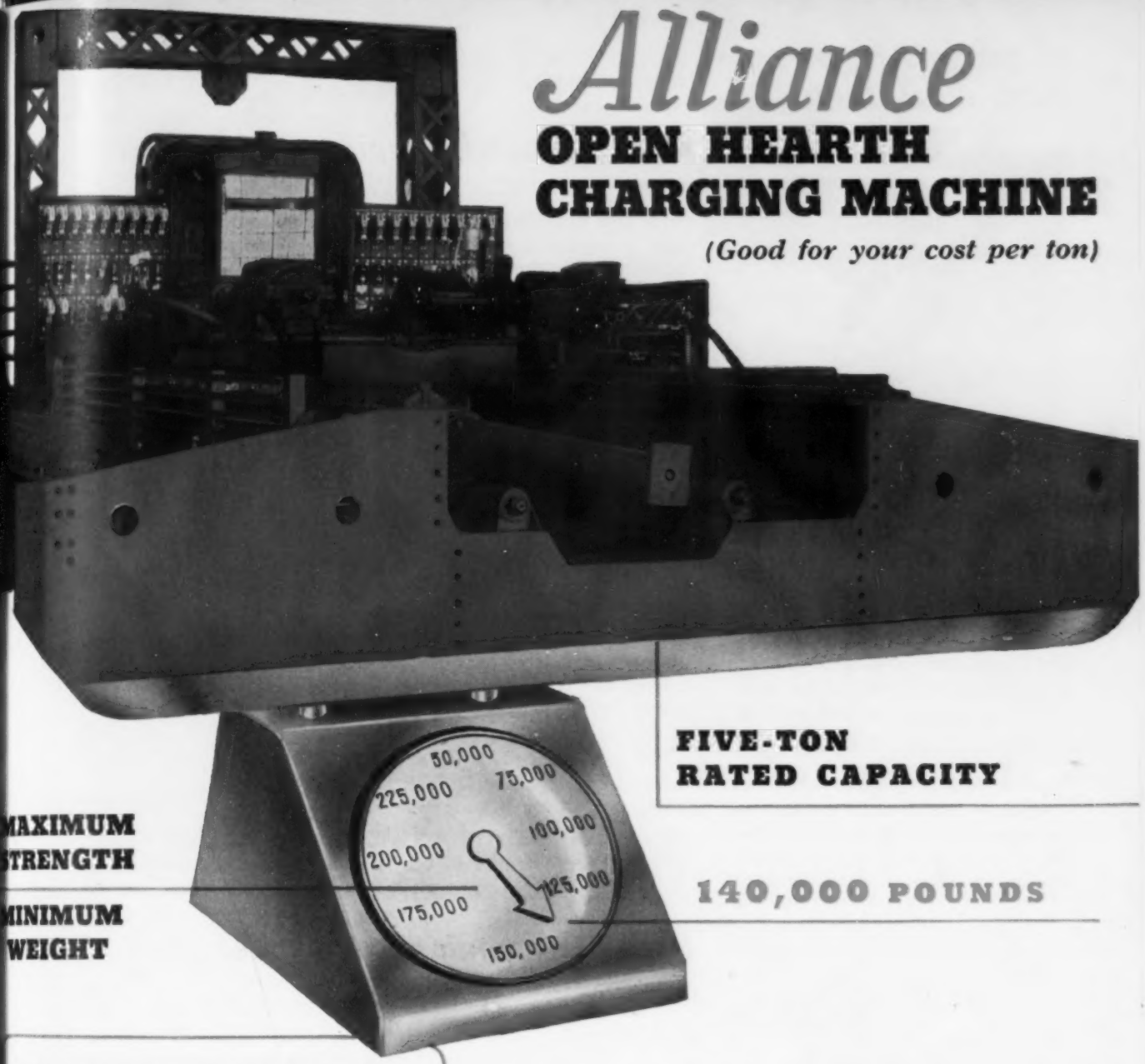
Using automatic depth control method, a reverse image attachment for Cincinnati Hydro-Tel type milling machines is employed for milling right or left-hand dies, molds, and hobs from masters of the opposite hand. With only one master, both right and left-hand matching halves of a die can be milled to perfect symmetry. The attachment consists of a rigid supporting base that carries an auxiliary table. At the rear, matched racks are engaged by a gear that acts as an idler between the two racks, translating movement of the machine table to movement of the attachment table in the opposite direction. A master shape mounted on the auxiliary table will be reproduced in the die block, but to the opposite hand. *Cincinnati Milling Machine Co.*

**For more data insert No. 3 on postcard.**

***Turn to Page 38***

# Alliance
## OPEN HEARTH CHARGING MACHINE

*(Good for your cost per ton)*




**FIVE-TON RATED CAPACITY**

**MAXIMUM STRENGTH**

**MINIMUM WEIGHT**

**140,000 POUNDS**

### with these exclusive *Alliance* features

- ★ Spring-loaded pitman prevents shock on peel.
- ★ Spring-mounted trolley wheels minimize shock to the operator.
- ★ Hydraulic lock rod gives operator finger-tip control.
- ★ All gears fully enclosed and run in oil.
- ★ Girders are made of two wide-flange beams welded together to form a box section and reinforced by diaphragms.
- ★ Machinery deck riveted to bottom flange of main and auxiliary girder keeps machine in perfect alignment.

● This new 5-ton capacity open hearth Charging Machine has all the special features found in larger Alliance Machines.

This all-welded Charging Machine replaced obsolete charger and required no building reinforcements due to its lighter weight. **Strength was not sacrificed.**

Alliance, world's largest builder of the world's largest cranes, has developed many special machines for moving unusual loads for heavy industries.

Alliance Engineers will be happy to discuss your specific requirements or give you general information of interest to your specific industry. Contact Alliance today.

**THE ALLIANCE MACHINE COMPANY**

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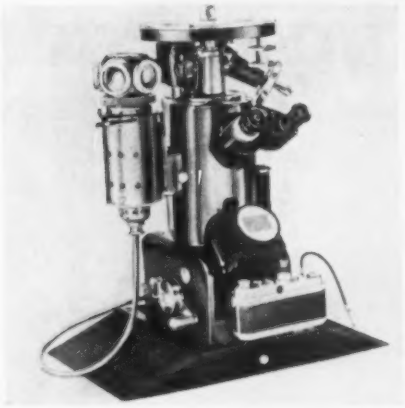
LADLE CRANES • GANTRY CRANES • FORGING MANIPULATORS • SOAKING PIT CRANES • STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATION

# *new equipment*

*Continued*

## Metallograph for rapid metal analysis



A new optically precise, compact and simple metallograph makes possible a rapid, low cost method of structural analysis of metal samples. Every facility for examination, study and photographic reproduction is provided. Objective, ocular and projective lenses are provided. Controls give fast, positive manipulation of all variables. The staging table is lifted instantaneously for lens changes. Lenses are quickly inserted and removed, need no centering, and no refocusing is necessary when they are changed. Samples can be observed through binoculars or on a ground glass screen. Photographs may be taken on 35 mm roll film by swinging the image from the ground glass to the camera. This low cost equipment includes a complete assortment of accessories to make it flexible. *F. T. Griswold Mfg. Co.*

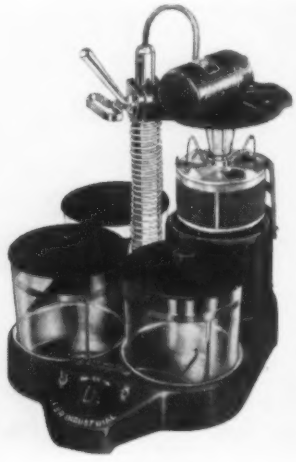
**For more data insert No. 8 on postcard, p. 37.**

## Magnetic probe indicates flux density

A new type magnetic probe, the D-79 Gaussmeter, reads the magnitude and direction of the flux density in an air gap as small as 0.025 in. thick and 0.01 sq in. The flux value is obtained as a steady reading on a dc meter movement as long as the probe is held in the magnetic field. No jerk or pull or ballistic reading or circuit breaking is required. The probe is suitable for plotting magnetic leakage fields, since it is entirely non-magnetic and the field is not disturbed by the probe. This allows in six ranges an accuracy of 2½ pct from 10 to 30,000 gauss for both ac and dc magnetic fields. Simple test jigs are adaptable for making production tests on magnetic materials with speed. *Dyna Labs, Inc.*

**For more data insert No. 9 on postcard, p. 37.**

## Precision cleaning machine for small parts



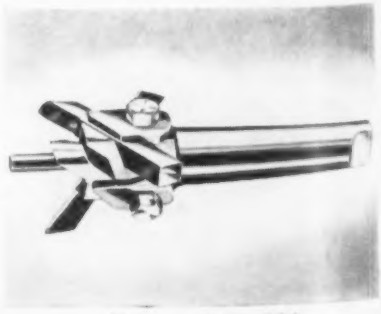
Improved motor and drive shaft are features of an industrial cleaning machine designed for small parts cleaning, polishing and drying. A 10:1 ratio ball bearing gear reduction motor is a universal series wound motor, rheostat control and may be reversed for more effective cleaning by means of a toggle switch. The machine measures 23 in. high x 16½ in. wide x 17¼ in. long. A Monel mesh work basket measures 5½ in. ID x 3⅜ in. deep into which triple nesting baskets fit to segregate small parts. Glass jars have 1½ gal capacity. A chromalox heater unit and a separate motor-driven blower in the drying chamber assure perfect drying of the parts cleaned. Centrifugal action of the basket keeps the parts stationary and prevents their damaging each other. *L & K Mfg. Co.*

**For more data insert No. 10 on postcard, p. 37.**

## Single operation, adjustable hole cutter

Cutting accurate, finished holes in a single operation is possible with new three-blade adjustable hole cutters. Replaceable cutter blades are easy to sharpen and easy to set. Body of the hole cutter is made of heat-treated steel with three high speed steel blades set 120° apart. Pilots are removable to permit the use of lead drills. Cutters have a cutting range of ⅝ in. to 5 in. diam, and thickness capacities from thin sheets to 1 in. *Robert H. Clark Co.*

**For more data insert No. 11 on postcard, p. 37.**



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# Conserve that Stainless!

If you possess any stainless steel of doubtful parentage, now is the time to identify it. Most stainless alloying elements are scarce—some have reached the critical stage.

Any mixed supplies of stainless steels you have in stock have become precious, and well worth sorting out.

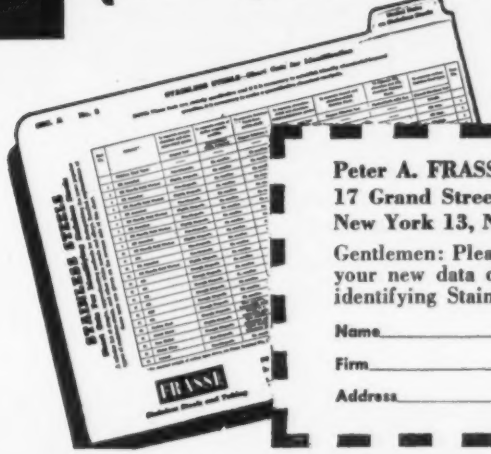
To help you, Frasse engineering service has recently revised and reissued our Data Chart, Sec. A No. 3—which describes 10 simple methods for separating stainless from carbon and alloy steels, nickel stainless from moly grades, straight chrome from chrome nickel grades, etc. A detailed explanation of each testing method is also included.

The chart is printed on durable cardboard stock, regular file card size, and can be filed, tacked on a wall, or slipped under glass for speedy reference.

A copy of this useful chart may be obtained by using the coupon below. Mail it today! *Peter A. FRASSE and Co., Inc., 17 Grand St., New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange St., Buffalo 3, N. Y. (Washington 2000) • 157 Richmond Ave., Syracuse 4, N. Y. (Syracuse 3-4123) • Jersey City • Hartford • Rochester • Baltimore*

## FRASSE for Stainless Steels

- Bars
- Sheets
- Strip
- Plates
- Angles
- Wire
- Tubing
- Pipe
- Fittings




Peter A. FRASSE and Co., Inc. 1-1B
17 Grand Street
New York 13, N. Y.

Gentlemen: Please send me, without obligation, a copy of your new data chart, Sec. A No. 3—listing methods for identifying Stainless Steels.

Name_____ Title_____

Firm_____

Address_____

# IRON AGE *introduces*

**Robert L. Craig,** appointed assistant to the director of industrial relations of the YOUNGSTOWN SHEET & TUBE CO., Youngstown Ohio. **George B. Curl** succeeds Mr. Craig as supervisor of employment.

**Ralph H. Lebow,** joined the PARKER APPLIANCE CO., Cleveland, as staff engineer for aircraft fuel system components.

**William F. Clemons,** named sales engineer for the UDYLITE CORP., Cincinnati.

**Dr. Harry N. Walker,** appointed vice-president in charge of sales of RICHARDSON-ALLEN CORP., New Haven, Conn.

**Dr. Charles Allen Thomas,** elected president of MONSANTO CHEMICAL CO., St. Louis.

**Curtis W. Young,** promoted as manager of the West coast sales division of the PREST-O-LITE BATTERY CO., Oakland, Calif. **Howard C. Buck** was appointed district sales representative in the Rocky Mountain region, with headquarters in Denver.

**Conrad F. Trowbridge,** appointed to an executive position in the Duluth office of PICKANDS MATHER & CO.

**T. D. Harter,** appointed Eastern district sales manager of the Clamshell bucket department of Blaw-Knox Div. of BLAW-KNOX CO., Philadelphia.

**J. W. Hargate,** granted an extended leave of absence as vice-president in charge of purchasing of the GRANITE CITY STEEL CO., Granite City, Ill. **Lyle Gulley** will assume these responsibilities during this period.

**Frank B. Wolcott,** appointed manager-manufacturing of the WYANDOTTE CHEMICALS CORP., Wyandotte, Mich.

**Maurice Schulzinger,** elected vice-president in charge of engineering of the STEELCRAFT MFG. CO., Rossmoyne, Ohio. Other promotions: **Nat Lehman,** named vice-president in charge of sales promotion and advertising and **William Skillman** was elected assistant treasurer.

**J. M. Moon,** elected vice-president of SIGNODE STEEL STRAPPING CO., Chicago. Mr. Moon continues in his present capacity as director of sales.

**Frank L. Johnson,** appointed manager of export sales of the NATIONAL SUPPLY CO.'s engine division, Pittsburgh.

**George O. Nations,** appointed manager of sales-ordnance, of the NATIONAL TUBE CO., Pittsburgh.

**J. W. Morgan,** transferred from eastern tractor equipment division to the industrial truck sales division, and will be manager of the North Central district for the HYSTER CO. in Buffalo. **Donald R. Shaffer** succeeds **John E. Mitchell** as Northeast district manager. Mr. Mitchell has joined Field Machinery Co. in Boston.

**Patrick Dolan,** named district manager of the newly established Baltimore office of the PATTERSON FOUNDRY & MACHINE CO.

**A. C. Towne, Jr.,** elected president of the MICHIGAN OVEN CO., Detroit. Mr. Towne was one of the founders of the company and has been the Buffalo district manager since the incorporation of the company.

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WILMOT F. WHEELER, elected chairman of the board of directors of American Chain & Cable Co., Inc., Bridgeport, Conn., and continues as its chief executive officer.

C. S. THAYER, named manager of Aluminum Co. of America's Northwest operations including the new aluminum smelting plant to be built at Wenatchee, Wash.

BOYD S. OBERLINK, elected vice-president in charge of the Tractor Div. of Allis-Chalmers Mfg. Co., Milwaukee.

# IRON AGE *salutes*

*Walter H. Gebhart*

FIGHT waste. That's the hard-hitting slogan of Walter H. Gebhart, vice-president-sales, Henry Disston & Sons, Inc. That slogan sparks Disston's current campaign to conserve materials in industry.

Walter Gebhart created the Disston program. It aims to save critical materials by prolonging tool life. It grew from a long-range interest in economy of labor and materials. The plan is tailored for every level of production and management.

The pressures of World War II and the Korean conflict have boldly underscored the need to fight for conservation and Walter Gebhart has taken that fight for his own.

He combines sound business knowledge with business creativeness. He knows his own industry inside-out—both as production and sales executive.

He's a joiner. He likes to talk and people like to hear him speak. To hundreds of organizations he has brought a refreshing wit, logic and thought.

A native Philadelphian, Walter Gebhart is the only non-advertising man ever to be president of the Eastern Industrial Advertisers' Assn. He has many interests. One of his chief hobbies is music. At 12 he was an accomplished pianist and organist. He has both taught and composed music.

Summertime is boating time for "Skipper" Gebhart. He moors his boat at West Point Island, well-known North Jersey yachting center.

CHARLES G. MERRITT, appointed chief metallurgist of the research and development division of Olin Industries' Winchester Repeating Arms Co., E. Alton, Ill.

EPHRAIN N. OSTERBERG, appointed director of purchases of the Stewart-Warner Corp., Chicago.

WINFIELD S. AXFORD, elected executive vice-president and a director of A. S. Campbell Co., Boston.

JAMES J. RYAN, named president of Superior Metal Fabricating Co., Niles, Ohio.

# IRON AGE *introduces*

***Continued***

**Robert L. Gibbs,** appointed manager of sales personnel of the MUELLER BRASS CO., Port Huron, Mich.

**H. R. Matheny,** appointed vice-president and general manager of CHRYSLER CORP.'s Highland Park plant.

**L. R. Williamson,** joined STRUTHERS WELLS CORP., Titusville, Pa., as consulting engineer in their machinery division.

**J. P. Somers,** appointed assistant vice-president of SYCKOFF STEEL CO., Pittsburgh, with headquarters in Philadelphia.

**James Howie,** appointed salesman at the St. Louis office of the WHEELING STEEL CORP. **Max Hopkins** will take a position in the defense controls division in Wheeling, W. Va.

**Alexander Gabay,** appointed assistant to the president of the WOOLDRIDGE MFG. CO., Sunnyvale, Calif.

**I. R. Walker,** elected a vice-president of R. HOE & CO., Birmingham. **W. S. Whitten** has been named Birmingham branch manager.

**Stanley D. Michaelson,** appointed to the newly-created position of chief engineer, raw materials division of TENNESSEE COAL, IRON & RAILROAD CO., Birmingham.

**O. Wendell Macy,** appointed sales manager of Hydraulic Power Div., of the HYDRAULIC PRESS MFG. CO., Mt. Gilead, Ohio.

**P. A. Haythorne,** appointed chief metallurgical engineer at DOUGLAS AIRCRAFT CO., Tulsa, Okla.

**William F. Schafer,** appointed sales engineer, with headquarters in New York, for the Arthur Colton Co., division of SNYDER TOOL & ENGINEERING CO.

**Paul W. Allen,** named plant manager of the MacIntyre development of the NATIONAL LEAD CO., New York.

**Laurence R. Keltner,** named director of employee relations of the B. F. GOODRICH CO., Akron, Ohio.

**John S. Morris,** appointed supervisor of construction, centralized maintenance department at the LUKENS STEEL CO., Coatesville, Pa.

**Ray Long,** joined the Birmingham office of LURIA BROTHERS & CO., INC., as purchasing agent.

**Rene J. Mechin** and **Charles R. Ince,** elected vice-presidents of the ST. JOSEPH LEAD CO., New York.

**M. Ruzicka,** appointed manager of installation and service of the LE BLOND MACHINE TOOL CO., Cincinnati.

**Robert A. Armstrong,** appointed executive assistant to the president of MICHIGAN SEAMLESS TUBE CO., S. Lyon, Mich.

**Donald B. Huntting,** appointed sales representative in the Cincinnati area for the E. HORTON & SON CO.

## OBITUARIES

**Dilwyn S. Stevenson,** purchasing agent for the U. S. Pipe & Foundry Co., Burlington, N. J., after a brief illness.

**Layton R. Harms, 47,** for over 25 years in charge of the specialty division of the Worden-Allen Co., Milwaukee.

**Alexander Smith,** assistant chief engineer of Farrel-Birmingham Co., Inc., at his home in Ansonia, Conn., at the age of 58.

**C. C. MacBurney,** the first salesman of the Ekco Products Co., Chicago, who at his retirement was vice-president of the firm's bakery division and Eastern district sales manager, at the age of 71.

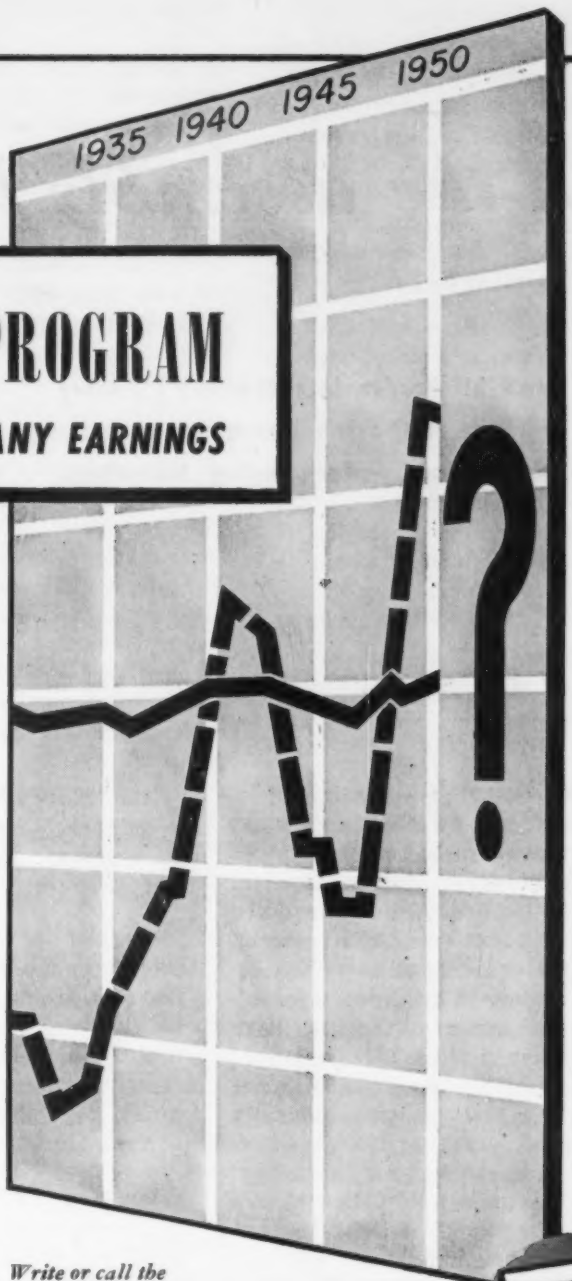
**Clarence A. Carrell, 54,** Atlanta district sales manager of Acme Steel Co. A thirty year veteran with the company.

**Alexander F. Blackwood,** representative of Crown Chemical Corp. and the Bellis Heat Treating Co., at his home in Lakewood, Ohio.

*Patterns in Pensions*

# YOUR RETIREMENT PROGRAM

## SHOULD BE GEARED TO YOUR COMPANY EARNINGS




***IF your company***

### EARNINGS ARE STEADY

Your company probably can afford the permanent commitment of an adequate pension system.

***IF your company***

### EARNINGS ARE ERRATIC

Your company probably can best solve the retirement problem through a deferred profit-sharing trust—or a combination of a modest fixed pension commitment plus a profit-sharing retirement plan.

***FIND OUT what plan BEST fits your business***

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# *on the assembly line*

*automotive news and opinions*

**Some hit harder in cutbacks . . . Alloy shortage most critical problem . . . Rally sales forces, offer buying incentives.**

*by Walter G. Patton*



**Some Sad, Some Pleased**—Letters sent out by Washington last week have caused many an automobile producer a lot of anguish. Several auto firms, however, have a right to be somewhat pleased with the contents of these letters.

According to available information, government authorities have now finished their calculation of the so-called automobile base period. The base period is officially the first 6 months of 1950 plus necessary adjustments for "hardship" cases. After all adjustments are made, the "base" period comes out to a surprisingly high figure—more than 7,750,000 units annually. The size of this figure, however, is relatively unimportant.

The latest cut in steel allocations for automobiles to 65 pct of the base period poses a big problem for the industry. There is no assurance that even the major car producers will be able to hit the schedules they are entitled to in the third quarter.

**GM Cut Back**—In the reshuffle by government statisticians some auto producers benefited—others were hit. Hardest hit in the initial computation, according to available information, was General Motors whose percentage of the industry was cut from 45 pct to less than 40 pct.

The Ford quota also suffered a setback. Chief benefactors, it is reported, were Chrysler and Kaiser-Frazer.

**Warned of Reduction** — Some Chrysler suppliers have been notified that production schedules will be cut "drastically" commencing in July. A steel shortage, government restrictions and large inventories have probably contributed to the reduction.

**Spewing Them Out**—Chevrolet has built half a million Powerglide automatic transmissions in 17 months and 17 days. In Cleveland, Chevrolet is now operating a transmission plant comprising more than a million sq ft.

This plant is the largest single building in the Chevrolet network of 25 plants in 20 cities, according to T. H. Keating, general manager of the firm.

**Most Critical Shortage**—Many metallurgists are convinced the most critical long-term shortage facing U. S. is alloying elements. While the number of pounds of alloy steels being used in an automobile is decreasing, other applications requiring alloys and alloy steels are expanding at a terrific rate. Operating temperatures in powerplants and refineries are going up.

High compression engines are coming. Jet engines and gas turbines require fabulous amounts of alloy. A shooting war invariably results in the permanent loss of millions of pounds of precious, unreplaceable alloying elements.

**Needed Steps**—Many metal experts are convinced the United States should start a vigorous program for conserving alloying elements. Only the absolutely necessary amount of alloy for the job should be used. Compositions will have to be tailor-made.

**Landing Gears** — Willys-Overland Motors, Inc., will make landing gears for C-119 cargo planes. Willys also announced negotiations are under way for a $2 million tooling program to enable Wilson Foundry and Machine Co., Pontiac, to produce shell cartridge cases.

Willys-Overland will use 430,000 sq ft of available plant space for the wing and nose landing gear assemblies. A requirement of 350 heavy duty machine tools is estimated for landing gear components. Willys will also expand its forging facilities.

**Higher Pressure**—Here are some

# assembly line

*Continued*

selling tactics adopted by Hudson dealers. In Springfield, Ill., a flock of turkeys was given to anyone buying a new or used car during the holiday season. Another dealer gave away 100 gal of gasoline and free license plates. Free tickets to a Gene Autry show were given to children under 12 who brought their parents in for a free ride in the new Hudson. Telephone solicitations are being stepped up.

A Buffalo dealer is mailing 2500 postal cards each month. Salesmen have been instructed to call ten competitive owners every day by telephone and contact five Hudson owners and five prospects daily. Transportation is furnished for wedding parties.

**In Black and White**—Reflecting the slowdown of new and used car sales are statistics compiled by the Commerce Dept.'s office of Business Economics. The government agency says retail inventories of automobile dealers had a book value of $2,161,000 at the end of January.

The adjusted total jumped to $2,507,000 by Mar. 31, the agency said. Auto dealers' unadjusted inventories have increased $840 million for the year ended March, 1950.

**Used Car Deflation**—Marketing experts agree that used cars are dragging their feet. Auto sales executives watch the number of used cars held 30 days or longer very closely since this is a telltale sign of a slower market.

A Toledo auctioneer has recently compiled price data for *Automotive News* showing the change in prices of used cars sold at auction between Jan. 4 and Apr. 26. The compilation shows that most 1948, 1949 and 1950 models have dropped $200 to $300 in price during the past 3 months. A reduction in value of used cars naturally acts as a stumbling block to the sale of a new auto.

**Badge of Honor**—Lincoln-Mercury Div. is assigning registration numbers to its service mechanics. The employe's name and registration number will be embossed on a rubber stamp which will be used on a seal placed on each car repaired by that mechanic.

L-M looks for this program to build a genuine feeling of respect for its dealers and their service departments. The company also hopes to give mechanics a pride of workmanship and training they have never had before.

**K-F Fights Back**—As usual, Kaiser-Frazer is not taking its slackened sales pace lying down. Starting this week, dealers and salesmen are inaugurating a sales campaign which is expected to result in 500,000 demonstrations in 5 weeks. Incentive payments to salesmen are being offered which can be pyramided as high as $300, according to K-F.

Backing up the campaign of demonstration, K-F is exploding a million dollar advertising barrage during the same 5-week period.

**Transition Pains**—The payoff in high production automotive tooling has always been slow. A machine tool may finish 850 cylinder heads in the same time it takes one man to make one cylinder head with hand tools. The changeover period is painfully long.

An auto plant changing over to tank production may find it can use one-third of its available tools. Many of these machines will have to be remodeled or relocated or both, AMA points out.

**Unemployment at Ford**—Henry Ford II came out swinging this week against ill-advised and unnecessary government controls. In an address that was sharply critical of the administration in Washington, Ford said 10,000 Ford employees will be idled for months because it is impossible to get early delivery of machine tools for defense.

Arguing for more "realism" and less confusion in Washington, Ford pointed out that initial reports of a 40 pct cut in auto output during the second quarter have turned out to be 20 pct. He also said that NPA had reported its third quarter steel requirements for defense were 6 million more tons than the entire industry could produce.

**THE BULL OF THE WOODS** By J. R. Williams

# west coast progress report

*digest of far west industrial activity*

*by R.T.Reinhardt*

**Kaiser's Eighth**—Kaiser Steel Corp. will pour the first heat from its eighth 200-ton openhearth at Fontana this week. Steel capacity will increase by 180,000 tons per year to a total of 1,380,000 tons.

This facility is part of the $24.5 million expansion announced last September when the corporation launched its private financing program. Tinplate facilities now under construction are expected to be in operation in the second quarter of 1952.

**May Draw Fabricators**—Motor car and truck assembly plants may be attracted to San Bernadino County because of the presence there of the Kaiser steel plant according to Industrial Survey Associates which has just completed a study of the future of industry there.

Analysts point out there may be a marked increase in production of smaller steel components for the auto industry. Total tonnage of these in each car about equals the larger body and fender stampings.

**Ore Tax Boosted**—Utah's tax commission has tentatively raised the assessed value of the state's iron mining properties by 700 pct.

Last year total valuation was $3,737,415 and this year will be $24,177,127 as a result of a new method of valuing ore. Heretofore valuation has been based on the selling price but now a "working backward" from the pig iron price has been adopted.

Adoption of the new evaluation method is tentative. Points on which it may be challenged are: it amounts to new tax legislation by a ruling of an administrative body; it is discriminatory in relation to other non-integrated metal mining companies where it would be impossible to tie ore valuation to the value of the refined product.

**Steel for Aluminum**—Consolidated Western Steel Corp., San Francisco, is rushing the largest single job its Orange, Texas, plant has handled, fabricating 26,000 tons of steel for Kaiser Aluminum and Chemical Corp.'s aluminum plant at New Orleans.

Fabrication includes structural steel for buildings and reduction cells which will produce 100,000 tons of aluminum per year. Consolidated is also erecting the steel. Aluminum production is scheduled to start in November with full production reached by April 1952.

**Chrome Ore Depot**—Miners in the West will soon be able to deliver chrome ore to a depot to be established at Grants Pass, Ore., as during World War II. Then the government purchased about 114,000 tons in that same region. Miners are expected to receive $115 per ton for metallurgical grades containing CR 203, 48 pct and with chrome-iron ratio 3-1.

**Titanium Aided**—Recovery of titanium was stimulated last week when the Titanium Metals Corp. was granted certificate of necessity in the amount of $14,162,840 for its plant at Henderson, Nev.

**Foundries Use Gas**—Four Los Angeles foundries have received shipments of Reda gas-fired furnaces to which they have turned to beat the coke shortage and strict regulations of the county air pollution control authorities.

Furnaces are expected to produce 1000 lbs per heat after 20 to 25 minutes firing time. Other foundries are interested.

**Payrolls Soar**—Employment in West Coast aircraft plants has risen 36,000 since the start of the Korean war to a total of approximately 165,000 and an estimated 25,000 more will be on the payrolls by year end. Southern California plants alone account for about 137,000 and in the Pacific Northwest Boeing Airplane Co. employs more than 26,000.

The aircraft boom is having its effect on smaller metalworking plants although the impact has been slow in coming. Lockheed Aircraft Corp. at Burbank, Calif. alone plans to distribute $300 million worth of contracts to suppliers this year. About 40 pct of this will go to suppliers in the Los Angeles, area.

# unusual hardening jobs

## are run of the mill for flamatic

For instance, hardening tooth profiles (not the roots) of 24-inch OD starter ring gears—and holding flatness within .005", roundness within .003" to eliminate corrective operations—was tough job that became a "set-up" for Flamatic hardening with electronic temperature control. Initial success led user to buy two additional machines now handling 35 different sizes of ring gears.

Specs for the automotive transmission cam (left) called for hardening six internal lobes uniformly to a precise hardness and pattern. Flamatic engineers developed a special fixture to harden all six simultaneously, on a high production basis with virtually no rejects.

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# *the federal view*

*this week in washington*

*by George H. Baker*

**Control Bill Stuck** — President Truman's plea for a 2-year extension of federal controls over materials, prices, and wages has thus far produced little more than a shrug and a "show-me" attitude on the part of Congress.

As a result, a 90-day extension of the Defense Production Act beyond June 30 is the most the Administration can hope for at this time.

Basically, the current apathy toward the entire control program lies at the grass roots. Many Congressmen are concluding that their constitutents think the program—particularly price controls at the retail level—isn't worth saving.

**Educational Oratory**—The White House is planning to unleash a spirited "educational" program in an attempt to whip up new interest. Present plans call for a rash of carefully-planned speeches by key public officials before all types of audiences—businessmen, housewives, retailers, and labor.

All will be pitched to the theme that anyone failing to cooperate 100 pct with the control program is just "helping Joe."

**Postpone Price Order?**—Mounting pressure from machinery manufacturers and their Congressmen may force postponement of the scheduled price rollback order affecting the industry.

Current OPS timetable calls for rollback on May 28 of all machinery (including machine tools and virtually all fabricated products) prices to pre-Korea levels, plus labor and materials costs increases through Mar. 15.

**Alternative Methods**—Manufacturers are given optional methods of arriving at the new prices. But one man's meat is another's poison, so each firm affected by the order (CPR 30) is carefully studying each cost avenue in an effort to select the most efficient pricing system for its own requirements.

Look for a 30-day extension of the effective date of CPR 30 if machinery builders continue their protests to OPS. Precedent for such a postponement is already being set by hardware retailers affected by another price order (CPR 7) fixing mark-up percentages.

**Negotiated Procurement Hypo**—A new government procurement policy should enable smaller businesses to take a bigger part in military contracts for products or services.

The Munitions Board is advising major procurement offices that all negotiated procurements for goods and services, except classified, amounting to $10,000 and over must be publicized, including a listing in the Commerce Dept.'s synopsis forms. These are to be broken down into small lots, if possible, in order to spread the business.

Although condensed, efforts will be made to state basic materials information as well as general sizes. Seen as of special aid to smaller firms will be the inclusion of building or repair of structures, bridges, roads, and other similar items.

**Seaway Blocked Again**—One of these years Congress is going to give the green light to the St. Lawrence seaway project—but not in 1951.

Opposition — principally from railroads — apparently has once more stymied the 50-year-old dream of Great Lakes shippers.

Senate and House committees now considering seaway legislation are being told that it would be a crying shame to divert steel and other construction materials away from the production of tanks and guns.

**Home Building Drops**—Effects of restrictions on home building, due to the long lag-time, are just beginning to show up. Since last fall, it has been part of the materials conservation plan to force a reduction of one-third in the number of residual units built this year. This, officials figure, would result in diverting something like 1.8 million tons of steel from girders, boilers, radiators and other fixtures, into other industries.

In April, for the first time, building reports are showing a downward trend in new starts. But credit, rather than NPA materials restrictions, seems to be doing the job. Builders are complaining bitterly to the Federal Reserve Board that credit curbs are making it impossible for lending institutions to pick up mortgages, even FHA approved loans.

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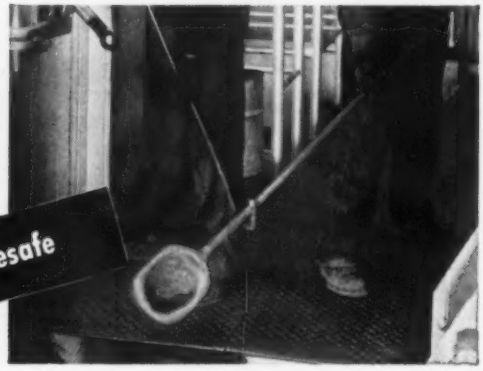


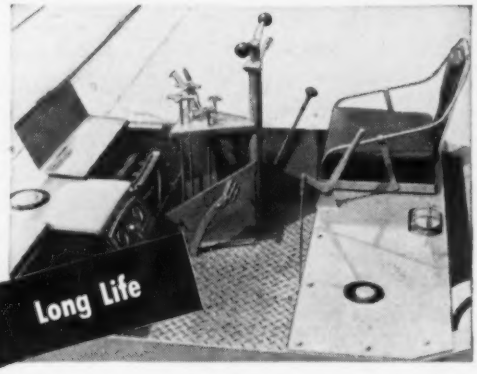


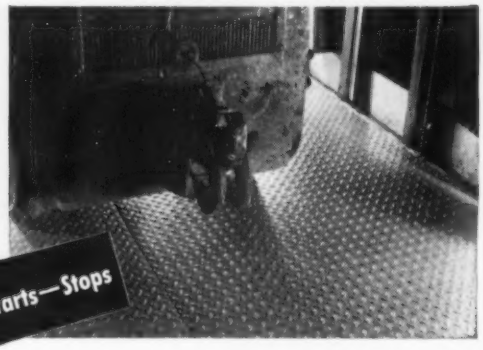


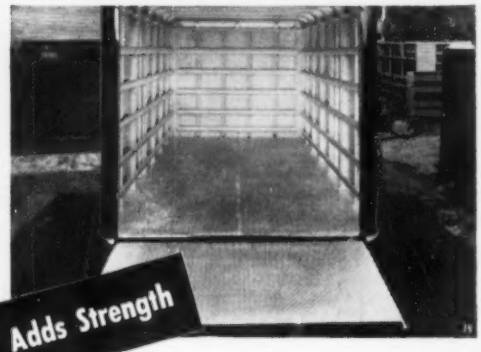


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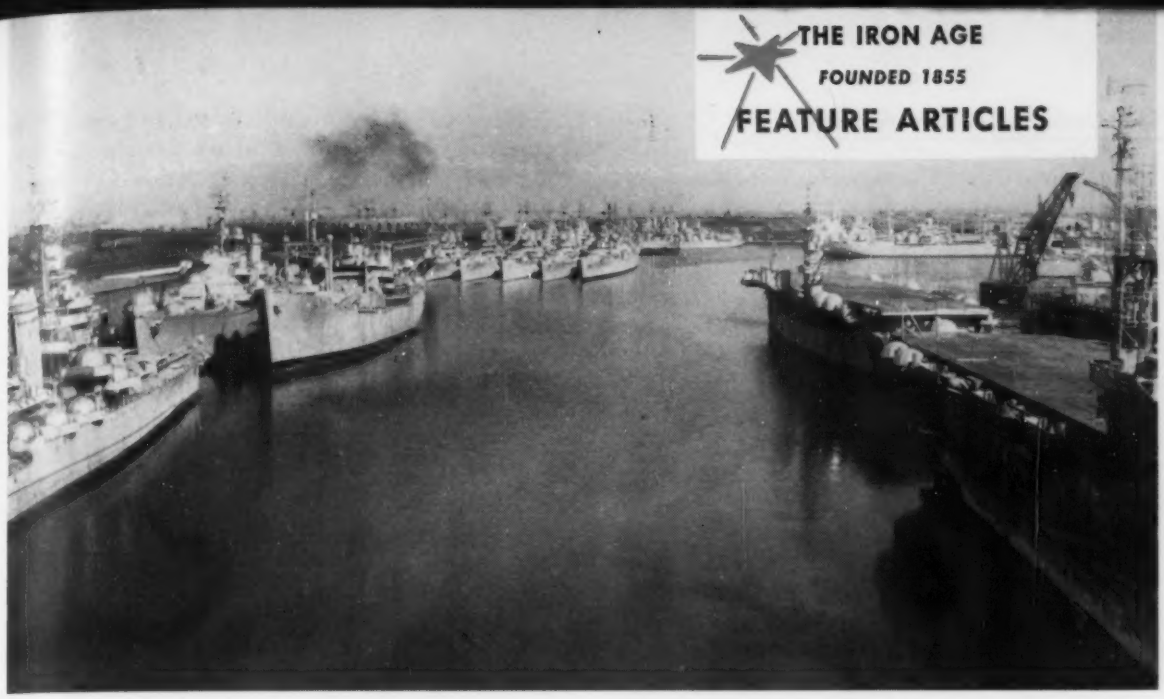


FIG. 1—As can be seen in this photograph of one group of "mothballed" warships, the Reserve Fleet includes all types of vessels from battleships and carriers to destroyers and even smaller boats. Official U. S. Navy Photo.

# Reactivated warships prove that "MOTHBALLING" WORKED

By Capt. C. H. Sigel
*Operations and Plans Officer*
*Staff, Commander Atlantic Reserve Fleet*
*New York*

**The methods, and the results obtained in dehumidifying 2000 battleships, carriers, destroyers and other warships should prove helpful to industry. Costs of preserving this multi-billion dollar fleet were relatively low—power costs for a 35,000-ton battleship running to about $1550 yearly.**

With a war-end fleet several times greater than the national economy could afford in peace time, the Navy was faced with either scrapping many billions of dollars worth of ships or finding an economical means of preserving them. By the coordinated effort of manufacturers, Navy technicians, and civilian consultants working under the supervision of the Bureau of Ships, a policy of preservation was developed. Some 2000 ships, Fig. 1, were placed in reserve, in a condition of readiness for duty on short notice.

Now, when many segments of industry are converting from the manufacture of civilian goods to defense materials, the experience gained in the Navy's Reserve Fleet is available for application in other fields.

The importance of adequate preservation has long been a concern of the Navy. Normal maintenance of ships and equipment operating under every extreme of weather conditions has always been a challenge. The shipment and storage of vast quantities of supplies and spare parts made early contributions to preservation, packaging and storage techniques.

The re-commissioning of World War I destroyers and submarines at the beginning of World War II emphasized two important points. Preservation methods and procedures then in use were inadequate for a modern man-of-war, with its rapidly increasing complexity. In spite of the disappointing delays in these re-activations, the basic idea of keeping naval vessels in reserve for an emergency was proved sound.

Even this comparatively small number of destroyers and submarines literally proved to be life savers. They made it possible to hold the line in the vital Battle of the Atlantic until our shipbuilding industry was geared to produce the new vessels which finally tipped the scales.

This experience, plus the rapid build-up of the fleet, showed the Navy's long-range planners the need to develop more effective methods for laying up and maintaining large numbers of vessels at low cost. Intensive research and planning started as early as 1943. The Reserve Fleet concept, as it exists today, is the development of that early effort.

*A previous article, THE IRON AGE, April 26, p. 92, described the experiences of the Ordnance Corps in storing and preserving weapons, machine tools and other war paraphernalia.—Ed.*

Preserving and maintaining men-of-war in reserve involves many considerations not present in other similar programs. Some of these considerations are not readily apparent to one not directly concerned with maintaining naval power.

The consideration of paramount importance is readiness. The business man laying up a machine or a factory can reduce his problems to a straight dollars and cents basis. Depreciation, costs of inactivation, maintenance and activation are all factors easily computed. The time factor is of minor importance. The Navy, on the other hand, must be ready on short notice at all times. This readiness must be achieved even at the possible sacrifice of some economy. The fast tempo of modern war makes the price of unreadiness too high to be acceptable.

The complexity of a present-day fighting ship multiplies the problem of adequate preservation. This can be seen by comparing the job of laying up the cargo vessels of the maritime fleet with that faced by the Navy. The solutions arrived at are radically different, yet each solution meets the particular problem at hand.

Maritime Reserve ships in general consist of essentially an empty hull, with a low-speed power plant of simple, rugged construction. Preservatives consisting of a mixture of metal conditioning compound, iron oxide and linseed oil prove adequate under these conditions. Maintenance of preservation is reduced to a minimum and manpower requirements are extremely small.

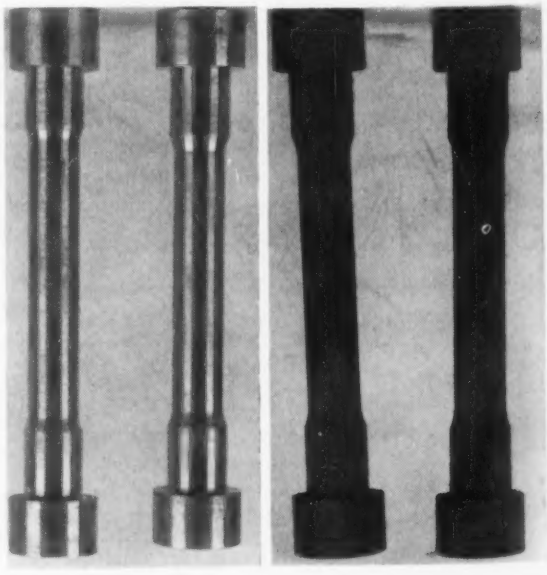
The typical Navy ship is a highly complex machine. Its high-speed characteristics require power plants and auxiliaries with highly refined tolerances easily upset by a minimum of corrosion. Delicate electronics equipment, fire control and ordnance gear, ammunition handling gear, all require much greater attention than the limited rugged equipment on the cargo ship.

The Navy found its solution in known methods and materials, specially adapted to fit its peculiar problem. The unusual feature is that these methods and materials were used on a scale never dreamed of before.

Essentially, the preservation program in the Reserve Fleet is a combination of the following: a) *Dehumidification of interior spaces by either dynamic or static means;* b) *coating all corrodible surfaces with thin film rust preventive compound where not otherwise protected;* c) *packaging with strippable film or metal moisture barriers to protect machinery or equipment exposed to the weather—dehumidification within these packages may be either dynamic or static;* d) *use of normal maintenance type paints for topside, exposed surfaces;* e) *use of normal maintenance coatings for under water surfaces.*

Between World Wars I and II many advances were made in preservative coatings and their application. However, there was no way of ad-

FIG. 2—On the left is shown two steel test bars after 36 months in a 30 pct humidity test cabinet. On the right are shown identical bars after the same period of exposure in 90 pct humidity.



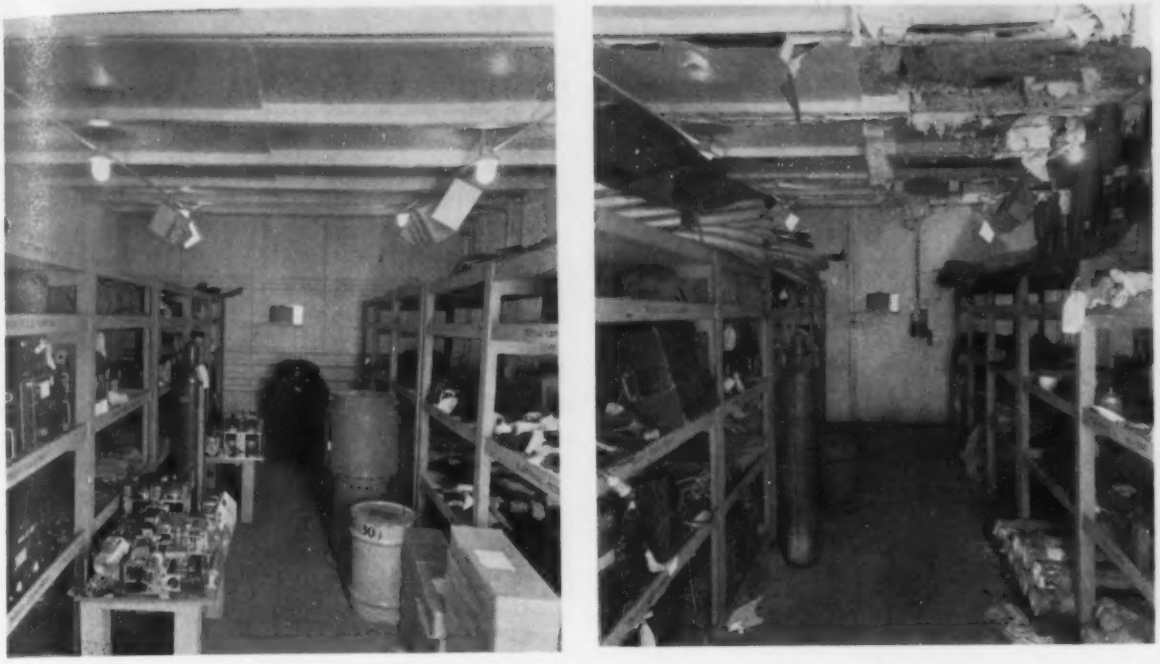


FIG. 3—The equipment stored in the test chamber shown on the left is still in good condition after 36 months at 30 pct humidity. The walls, as well as the supplies, in the 90 pct humidity chamber shown at the right suffered severe deterioration in a test of similar duration.

quately protecting the many components which must remain fully assembled to maintain the necessary degree of readiness. Experiments in dehumidifying ships statically with lithium chloride were made as early as 1925, but lack of funds prevented their being carried through to completion.

Early in World War II, this research was resumed and intensified. It was known that, with most materials, deterioration was almost entirely moisture-induced, Figs. 2, 3 and 4. Moisture either caused or aided corrosion, verdigris, tarnish, mildew, mold or rot. Deterioration caused by salt water, salt-laden air, dust, corrosive vapors or gases, electrolysis and sunlight were separate problems of lesser concern at the moment.

The aim of the research was to find a method by which all machinery, boilers, piping, electrical apparatus and other equipment could be left completely assembled and ready to use. A small, specialized auxiliary vessel, not required for her intended duty, was assigned as a floating laboratory. Exhaustive practical tests under closely controlled conditions cleared up several points which had puzzled researchers up to that time.

## Continuous operation not required

It was determined that: a) *30 pct humidity would prevent moisture-induced corrosion, mold and mildew;* b) *this percentage humidity could be obtained and maintained within the envelope of the ship;* c) *material, machinery and equipment could be kept in their normal positions fully assembled, with the ship serving as its own storehouse;* d) *distribution of dry air to attain a uniform percentage humidity was practical;* e) *residual moisture held in materials or surfaces required an initial drying-out period of a few weeks to several months;* f) *surface adsorption within the ship causes an effect analogous to inertia, which prevents rapid changes in humidity.*

This last point was of major importance. It made possible an intermittent control arrangement without adversely affecting preservation and without wasting power. Extensive repairs to dehumidifying equipment can even be made if reasonable care is used in keeping the vessel closed.

Based upon the results of this research the Bureau of Ships, with the cooperation and assistance of manufacturers, developed dehumidifying machines and controls to perform the required job.

The dehumidifiers employ a solid desiccant such as silica gel or activated alumina as the drying agent. All except the smallest dehumidifiers are dual bed machines which permit continuous delivery of dry air, with reactivation of the saturated bed going on simultaneously. The fan for circulating dry air through the distribution mains is an integral part of the machine.

Reactivation of the exhausted desiccant bed is accomplished by a separate air circuit. Outside air is heated with electrical elements located either in the desiccant or by strip heaters in the air stream. The reactivation air is discharged to the weather. Cycling of the two beds is entirely automatic.

A unique controller-recorder provides auto-

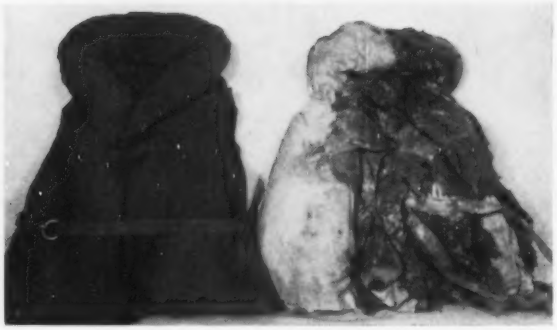


FIG. 4—Originally, these two life preserver jackets were identical. The one on the left was preserved at 30 pct humidity for 3 years, while the other was subjected to 90 pct humidity for the same length of time.

## 'Mothballing' worked (continued)

matic starting and stopping of the dehumidifier to keep percentage humidity within acceptable limits. The instrument is connected to several sensing stations located at strategic points throughout the dehumidified zone. An average of the humidity readings energizes or stops the dehumidifier. The instrument may be set to control continuously or at selected time intervals.

Preparation of a ship for dehumidification is comparatively simple, because of fairly effective weather tightness necessarily built into it originally. All openings and cracks are sealed to exclude humid outside air. One access door is left unsealed to permit entrance into each dehumidified zone for inspection and maintenance. It has been found that the additional load on the dehumidifier caused by humid air entering through the access door is negligible if reasonable care is used to keep the door closed.

Small ships, such as destroyers and below, have one dehumidifier. The largest combatant types are divided into as many as eight zones and use a similar number of dehumidifiers.

Within each zone an existing piping system is used to provide the distribution system for the dry air supply. Usually the fire main serves this purpose, with normal outlets supplying individual compartments. Doors and hatches between compartments in any one zone are left open to provide for the return of recirculated air to the dehumidifier. Balancing of humidities recorded in the various sections of the zone is accomplished by adjustment of valves in the distribution system.

Moisture barrier packages (such as the "igloos" over topside ordnance), which are isolated from a normal interior zone, require the installation of a simple supply and return piping system, Fig. 5. It has been the practice to keep most such equipment in place topside as well as within the dehumidified spaces. Exposed navigational and ordnance equipment or deck machinery is protected by individual moisture barriers of metal or strippable film.

### Dehumidification proves successful

Normally the space within this sealed barrier is dehumidified statically by placing a pre-determined quantity of dessicant within the enclosure. An inspection window built into the barrier permits temperature and humidity indicators installed within the space to be examined.

Records indicate that dehumidifiers in the average, well-sealed ship will be in actual operation only a few hours per day, once the residual moisture has been removed during the initial drying out period.

With over five years experience in more than 2000 ships, dehumidification has proved to be a highly successful and economical method of preservation. Installed equipment cost is less

FIG. 5—In line with the Navy's policy of instant readiness for duty, topside equipment is kept in place, protected by moisture barriers consisting of metal "igloos" (to which dehumidified air is piped), strippable film and/or other materials. Official U. S. Navy photo.

than 1¢ per cu ft of volume in most cases. It is estimated that power for dehumidification of a destroyer having a volume of approximately 250,000 cu ft costs about $110 per year at 1¢ per kwh. Similarly, the power cost for a 35,000 ton battleship is about $1550.

It was found desirable to use a thin-film rust preventive in conjunction with dehumidification, which would seem to belie its value. However, it is readily understandable that corrosion of unprotected metal surfaces could occur during the initial drying out phase. This is particularly true in equipment which is not fully opened up, such as a high speed turbine. The time required for the air in a turbine to reach equilibrium at 30 pct humidity would be ample for damaging corrosion to affect internal surfaces.

The thin film rust preventive compound (polar type) specified by the Navy is essentially a combination of two major constituents: a solvent of light kerosene type, which evaporates, and a blend of solids, semi-solids or wax-like inert materials. The latter ingredient provides a very thin, tenacious film. It is soluble in diesel oil, fuel oil or lube oil and easily removed. It is applied by spraying or fogging through access openings, or by flushing in lubricating systems. Removal on reactivation is not necessary in most cases, although boilers must be washed thoroughly with hot water before being fired.

## Research program continues

A continuous search for new and better preservatives is constantly being pressed, in conjunction with manufacturers. Controlled tests of numerous coatings under actual conditions found in the various berthing areas are underway on a number of ships.

Tests have also been started in the Reserve Fleet to determine the practicability of cathodic protection of underwater surfaces. Excellent results have been obtained in the preservation of underground pipelines by this method. Tests by the Maritime Commission have produced satisfactory results with ship hulls. The Navy is going into the engineering aspects of this underwater cathodic protection on a large scale.

When operations began in Korea last June, there was an immediate, urgent need for ships. The Reserve Fleets were called upon to provide many ships for the movement of troops and material. This sudden and unexpected activation task offered an excellent test of Reserve Fleet plans and methods.

In the words of Vice Admiral O. C. Badger, Commander Eastern Sea Frontier and Atlantic Reserve Fleet, "On the whole, the results of the Reserve Fleet's storage and preservation activities were very gratifying. Reactivation was also successful, even though carried out under handicaps which would not be present in a full scale mobilization. Preservation methods proved to be fully effective."

Ships properly inactivated and preserved in accordance with prescribed methods came out of moth balls in as good or better condition than when they were laid up. Of the several hundreds activated, there were some where these optimum conditions did not exist. These exceptions brought home the vital importance of proper inactivation.

As originally conceived, the Reserve Fleet concept called for an inactivation overhaul and a thorough inactivation by the ship's crew. Unfortunately, the accelerated demobilization worked against this. Many war-weary ships, long overdue for overhaul, were carelessly inactivated by crews interested only in demobilization points. It was necessary to lay up many ships without any overhaul. A program of overhauls to be carried out every 5 years was instituted to overcome the effects of poor inactivations. However, reductions in funds and personnel curtailed and finally eliminated these overhauls. As a result, some ships required extensive repairs—which would have been necessary to keep them fully operational back in 1945.

(The views expressed here are those of the author and do not necessarily constitute those of the Navy Dept.)

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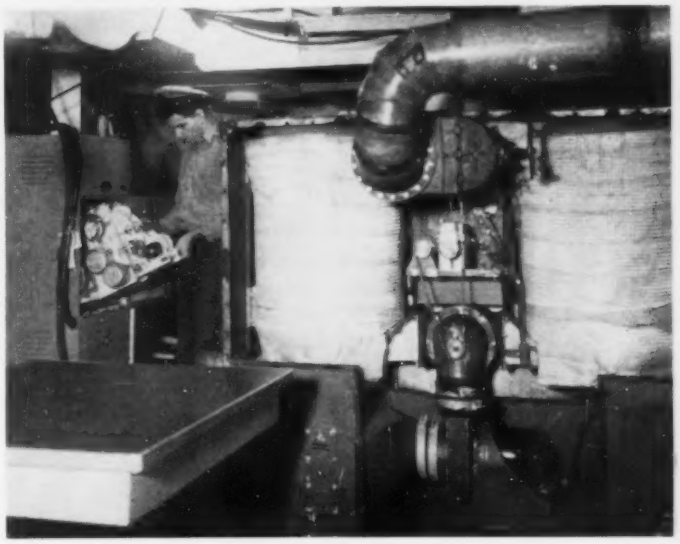
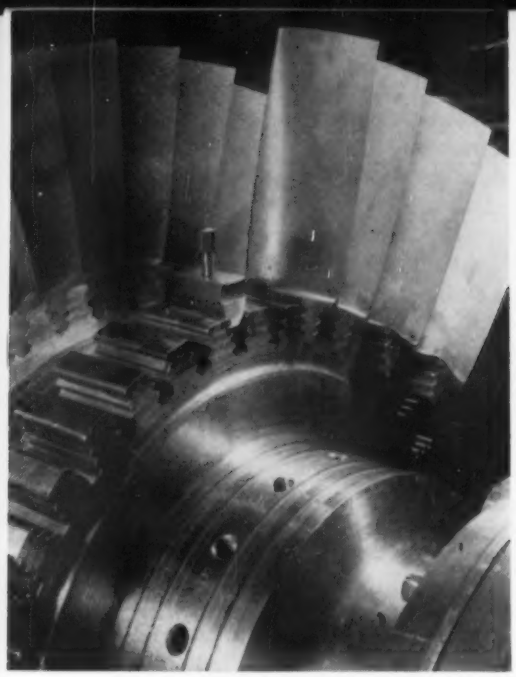
FIG. 6—This 500-cfm, dual-bed dehumidifier is typical of those used in the reserve fleet. Its two dessicant beds and controller-recorder unit (at left) can be seen in this picture.





# Prelocation

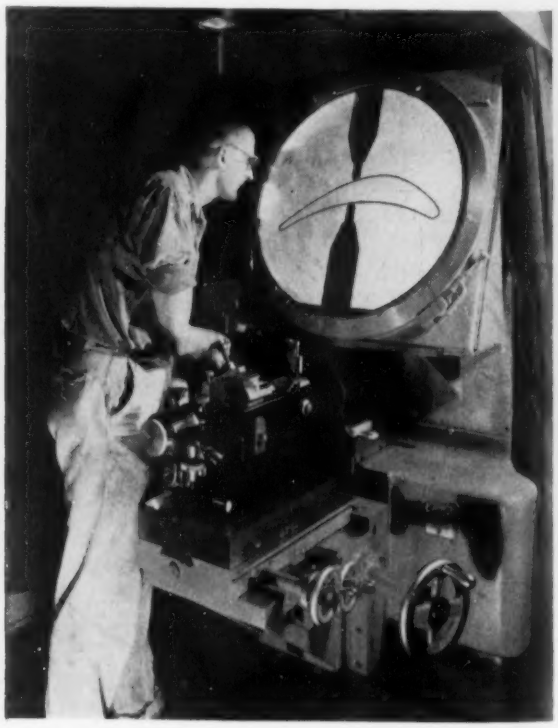
## SIMPLIFIES TURBINE BLADE LOCATION

TWENTY-ONE machining operations are required to finish these gas turbine blades. Perfect fit of "Christmas tree" roots is required to give maximum bearing area to resist high centrifugal force as turbine spindle spins.

**By George Elwers**
*Machinery Editor*

POSITIONING styli of Comparator on blade profile. Dividing head permits adjustment of blade position, before advancing block shown at right.

STYLI SHADOWS on Comparator screen must follow correct blade contour etched on screen. This assures that blade is properly oriented for casting into block, and provides check on correctness of shape of the blade.



**Fixtures to hold gas turbine blades for machining would be complex and expensive. Fixtures to hold square boxes are simple. So blades are prelocated in boxes with an optical inspection device, then cast in place. Tips and roots, on which machining is to be done, protrude.**

Machining parts of complex shape, particularly when they offer no surfaces easy to locate from, normally involves construction of complicated and expensive fixtures. But a novel method used on gas turbine blades allows relatively simple fixtures and setups to be used.

Blades are prelocated, with an optical inspection device, to project through a hole in a steel block with accurately ground sides. Then the blades are cast in place by filling the hole with a low-melting-point alloy. Blade and block are then handled as a unit, with machining being done on the exposed blade tip and root sections.

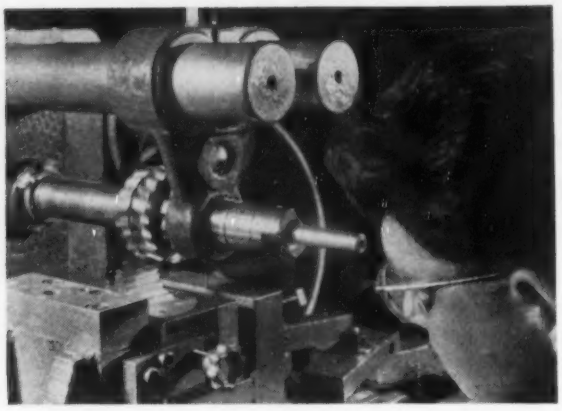
Allis-Chalmers Mfg. Co., Milwaukee, used this method to machine the blades for a recently completed gas turbine. This turbine required a total of 612 blades, ranging in length from 5¼ to 9¼ in. They were received as superalloy precision forgings, but required 21 different machining operations on the blade tip and the root sections.

Each blade forging has a triangular root section which must be machined and ground to the familiar "Christmas tree" type of serration which fits a matching pattern in the rim of the turbine spindle to hold the blade in place. These serrations must be machined with extreme accuracy because they hold the blades against terrific centrifugal forces as the disk spins. Every bit of bearing area must be used, so the fit must be perfect so that the maximum area is in contact with the matching pattern in the wheel rim.

Root serrations must be accurately machined with respect to the blade shape, so that the blade will be properly oriented in the stream of gas as it flows through the turbine. Maximum turbine efficiency is highly dependent on this. The angles at which the gas strikes and leaves the blades are critical, and it does little good to design and man-

BLOCK into which blade will be cast is advanced until blade projects through large hole, after blade has been correctly positioned. Sides of large hole will be sealed, then Cerrobend poured in through small hole in top of block.

SIMPLICITY of fixtures which hold blade-block unit is evident in this photo of crush grinding operation. Since blocks are all the same size all sizes of blades can be accommodated in the same fixtures.



STRADDLE-MILLING operation on bottom of gas turbine blade root. Fixture which holds block is far simpler than what would be needed to hold the blade itself.

## Machining turbine blades (continued)

ufacture the blade shape carefully if the blade is not then positioned properly in the turbine. To further complicate the problem, the center of gravity of any section through the blade should lie on a radial line through the center of the root.

But the shape of the blade above the root is extremely complex. It has no straight lines nor flat surfaces. In shape it roughly resembles an airplane wing which has been fixed at one end while the other end was twisted through about 45°. The complexity of fixtures necessary to hold and locate from such a section for machining operations on the root and tip can readily be imagined.

Instead, the method of casting the blades in blocks, or boxes, was used. The blades were located in the boxes by means of a Jones & Lamson Comparator, an optical inspection device. A ground glass screen was prepared to inspect the blade section profiles. On the screen, an enlarged outline of the correct blade profile at a given point along its length was etched. A blade was mounted on the Comparator in a dividing head, which could be turned until the blade was properly positioned.

The proper position was then determined by moving the machine's tracing styli over the blade surfaces at the specified point along its length, and observing the shadows of the styli as projected on the machine's screen. When the blade was in proper position, the shadows would follow the correctly positioned outline etched on the screen. This also served as a means to check the accuracy of the forged contour of the blades. This procedure was repeated at several points along each blade.

With the blade properly oriented, the mold block was placed over it, resting in a V-block on a movable bed of the machine. These blocks were about 6 in. square and 2 in. thick, with sides, top and bottom machined flat and square. The block was positioned, against stops, so that both ends of the blade protruded from the hole. The hole was then blocked up with insulating material, and molten Cerrobend, a low-melting-point tin-bismuth alloy, poured in. Thus the blade was accurately located with respect to the block, and fixed in that position by the solidified Cerrobend.

### Simplified Setup Saves Money

At this point, the blade and block was given to machinists for the 21 milling and grinding operations. The jigs and fixtures used, instead of having to be designed to hold the complex blade shape, only needed to accommodate the box shape. Location was from one or more of the flat machined box surfaces. The shortened and simplified setup cycle and the avoidance of complex fixtures for these operations showed substantial economies over other systems which might have been employed.

When machining was complete, the blade was freed by melting the Cerrobend which, with the block, could be reused for another blade.

# NEW BOOKS

*Materials Engineering of Metal Products,* by N. E. Woldman. The purpose of this volume is to help the materials engineer select the type of metal or alloy which is best able to meet a given set of service conditions. The text is clearly and simply written with full discussions devoted to the advantages and disadvantages of all types of metals and alloys in specific service applications. The book will be of particular interest to writers of materials specifications, industrial designers, metallurgical and mechanical engineers. Reinhold Publishing Corp., 330 W. 42nd St., New York. $10.00. 584 p.

*Ingenious Mechanisms for Designers and Inventors* (Vol. III), edited by H. L. Horton, is a comprehensive and useful reference treatise on mechanical movements and mechanisms selected from automatic machines and various other forms of mechanical apparatus. These outstanding examples of ingenious design embody ideas or principles applicable in designing machines or devices requiring automatic features or mechanical control. Vols. I and II of the same title describes mechanisms that perform similar functions but are all different. Industrial Press, 140-148 Lafayette St., New York 13. $6.00.

## MANIPULATOR CARRIES

# automatic welding head

**By H. E. Hodges**

*Weld & Structural Dept.*

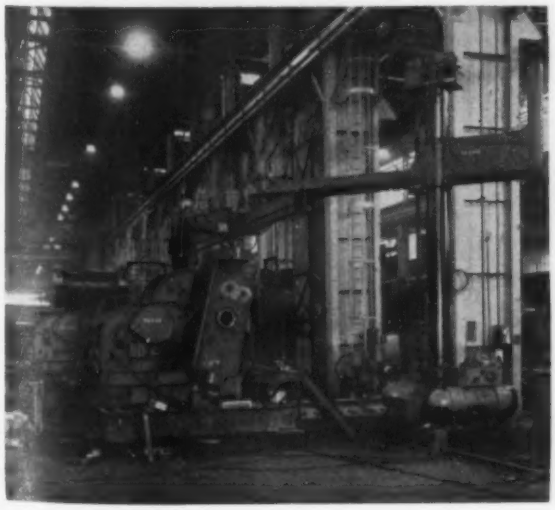
*Continental Foundry & Machine Co.*

*East Chicago Ind.*

Engineers of the Continental Foundry & Machine Co., East Chicago, Ind., have developed a manipulator for mounting an automatic welding head so that job welding and fabricating shops can use this process on a higher percentage of welding footage without incurring excessive handling and positioning time. Automatic welders are a worthwhile tool in any shop, but they are particularly valuable in job shops where the pressure of competition demands that labor costs be kept at a minimum.

As long as a high percentage of the outside exposed welding can be performed without too many changes in setup, automatic welding can be done economically in a general fabricating shop. In most cases before a job is started a survey is made to determine how many long joints are to be welded with an automatic machine and what amount of hand welding must be performed on the shorter joints. Many shops adopt minimum lengths of welded joint that can be economically done with an automatic. As a rule, this minimum is approximately 5 to 6 ft. Continental's manipulator reduces this minimum to 2 to 3 ft while still holding the positioning and setup time at an economically low figure.

AUTOMATIC WELDING on a tractor bed with a welding head manipulator built by Continental Foundry & Machine Co.



Continental engineers wanted a machine that would permit them to mount the work in any position or location within the automatic working area so that they could weld in any direction and at any practical elevation without changing the work. Their design allows them to weld long or short joints running in different directions as long as they are in the same plane.

### Machine is track mounted

The machine is mounted on a 50 ft long track. The car operating on the track is driven by means of an electric motor geared to one of the axles with power fed by a cable on a roll-up reel mounted on the car. The two welding generators are mounted on one car to provide a more compact unit. An 18 ft mast mounted on the car permits the welding head to operate from floor level to a height of 13 ft. The mast itself is mounted in a roller bearing socket in which it can revolve through a 360° arc. The primary boom is raised and lowered by means of a screw operated by an electric motor mounted at the top of the mast. The elevating screw revolves with the mast. The primary jib boom is 10 ft long and revolves 360°, completely around the mast.

The track for the automatic welding head is provided by a 20 ft long secondary boom which is pivoted in the middle so that it can revolve approximately 340°. It cannot revolve 360° because of the danger of damaging the welding

head caused by the cables becoming twisted and tangled. The welding head is a Lincoln submerged arc automatic mounted on a Lincoln tractor unit. All movement of the head and the car, as well as the raising and lowering of the jib boom, is done through remote control switches located at the welding head. Welding current is supplied by two 600-amp welding generators. Power is carried to the generators through cables on the floor.

This installation can serve a floor area 20 ft on either side of the track and 50 ft along its length. However, conditions in the East Chicago plant allow operation on only one side of the track. It can weld parallel to the track or at any angle to it and at any elevation up to 13 ft. The manipulator is sufficiently stable so that there is no sway or wobble in the secondary boom even when the jib is at its topmost extremity and the welding head is at one end of the track. Counterbalances are used inside the mast and also on the stub end of the jib boom to help balance the whole machine. The car is fitted with a set of rollers operating under the ball of the track to prevent the car from upsetting under the most extreme operating conditions.

In the plant there are three 16,000-lb welding positioners placed within the working area of the automatic. This permits automatic welding and hand welding to be done from one setup and allows more than one job to be worked at a time. It leaves sufficient floor space within the working area to do several jobs directly on the floor instead of in positioners. With this arrangement round cylinders, drums or tanks can be welded with equal facility. The positioners all have variable speed rotations on the table. A set of heavy-duty positioning rolls is also used for large round vessels.



# Pneumatic tube system speeds blueprint handling

A large West Coast manufacturer uses a 1 1/3-mile-long pneumatic tube system to speed blueprints from its central blueprint station to outlying technical departments. The system makes rapid deliveries at a speed of 20 to 25 fps and minimizes interdepartmental manual handling of prints. It also cuts blueprint production costs at least 40 pct. Previously, as many as 15 copies of a given print would be required whereas now only two are needed—one for current use, the other in reserve.

Designed and installed by the Lamson Corp., Syracuse, N. Y., the system comprises a 3x12-in. pneumatic tube network reaching from the central blueprint station to six substations. When someone wants a print, he calls the central station. The desired print is placed in a container, sent by tube to the nearest substation and is picked up by, or delivered to, the caller. The reverse procedure is followed when returning prints.

The system is powered by four turbo compressors, each operated by a 15-hp electric motor. This provides a displacement capacity of 2000 cfpm and a 16 oz-per-sq-in. vacuum.

The company also maintains a 15,000-ft, 3-in. cylindrical tube system for intraplant handling of messages, scheduling tickets, routing forms, small parts, small tools, etc.

CENTRAL STATION from which blueprints are circulated to scattered areas of a large West Coast industrial plant.

## Ceramic meeting features

# SUPER REFRACTORIES

**Fused zirconia, borides and cermets held the spotlight in the technical discussions. New methods of testing super alloys are speeding the evaluation of the latest materials.**

The 53rd annual meeting of the American Ceramic Society was held in Chicago April 22 to 26, with over 2000 members and guests in attendance. The Refractories Div. heard 24 papers, of which nearly half were on the new super refractories: oxides, carbides and cermets.

"Fused Stabilized Zirconia Refractories," by O. J. Whittemore, Jr., and D. W. Marshall of the Norton Co., Worcester, Mass., described the results of several years' work in developing commercial production of zirconia bare refractories. Zirconium oxide, as such, is not a suitable material for refractories because of the crystal inversion from monoclinic to cubic and back to monoclinic between 1000° and 1200°C. This inversion is accompanied by a large volume change; however, it can be partially or completely eliminated by controlled additions of calcium oxide or any of a number of other oxides. In the Norton process, the fused stabilized zirconia is produced directly from the zirconia-containing ores.

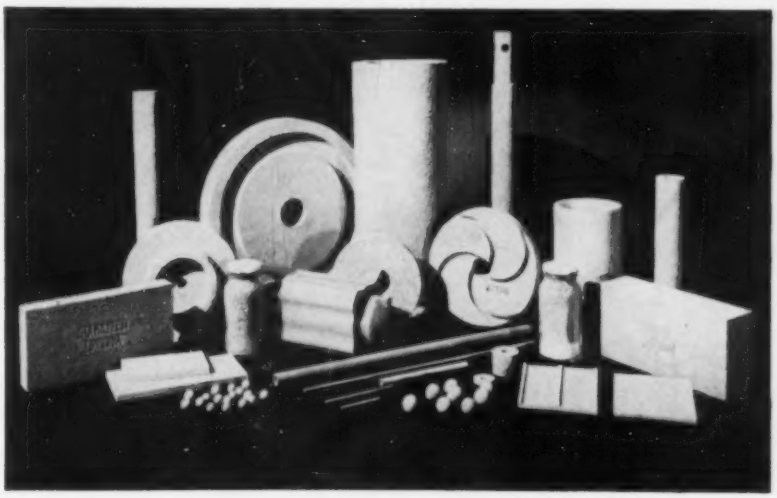
Of the five available zirconia-containing ores, zircon containing 66 pct zirconia is the best and cheapest source of zirconium oxide. The zircon and other materials are reacted in a large Higgins type electric arc furnace for a period of 30 to 36 hr.

In the process, 1/3 of the silica and some other minor impurities are volatilized off. While the FeSi forms primarily as a large button in the bottom of the furnace, the remainder is easily removed magnetically leaving fused stabilized zirconia of the following average chemical analysis: $ZrO_2$ (inc. 4.5 to 5 pct CaO) 98+ pct; $SiO_2$, 0.58 pct; $Fe_2O_3$, 0.35 pct; $TiO_2$, 0.44 pct.

Two different density materials are produced. One has a density of 120 lb per cu ft and is very useful as an insulating material, while the dense grade, 200 lb per cu ft, is used in making refractory shapes. After fusion, the materials are kiln roasted to remove carbon, then crushed, milled and screened.

Stabilization of zirconia with calcia only

Some of the stabilized zirconia molded shapes produced by the Norton Co., Worcester, Mass. Included are bricks and parts for furnace linings, tubing, heat exchange spheres, plates, cylinders, insulating grain.



lowers the fusion temperature from 2715°C, for pure zirconia, to 2600°C. The product containing 4½ to 5 pct CaO is about 70 pct stabilized (i.e. 70 pct of the crystals are cubic and 39 pct monoclinic). This produces a product having excellent thermal shock resistance as compared with unstabilized and with fully stabilized materials.

The properties of this material, plus low volatility and low reactivity with many other materials, indicate a promising future. Examples of uses to which zirconia has already been put include: (1) Gas synthesis furnace operating at 2550°C for 6 weeks, (2) setting plates for firing titanates, (3) excellent crucible material especially for noble metals and their alloys, as well as steel when no slag is present, and (4) as resistors for furnaces to operate in air at temperatures to approximately 2500°C.

### Many cermets studied

W. B. Crandall et al presented a paper describing "High Temperature Cermet Materials and Methods of Evaluation." Their work at the New York State College of Ceramics sponsored by the Office of Naval Research is of a general exploratory nature covering a great many materials and tests. The ceramic materials include: oxides, carbides, nitrides, borides, aluminides and silicides. The metals include: cobalt, nickel, iron, beryllium, zirconium, etc. The cermets prepared include combinations of one metal with one ceramic material as well as many multicomponent bodies.

Much of the work thus far has been on particle sizing, mixing and forming methods. Among the latter methods are resistance sintering, hot pressing and a combination of the two where the upper electrode is used as a plunger, after getting the batch hot, to apply up to 10,000 psi loads. The primary interest is in preparing oxidation resistant materials, so weight gain determinations were run at elevated temperatures. In addition, diffusion of metals into ceramics, phase studies and measurement of tensile strength, thermal expansion, thermal diffusivity, surface heat transfer coefficient and thermal shock resistance were determined.

E. W. Holman and J. R. Tinklepaugh, also of the New York State College of Ceramics, described hot pressing methods which they use for preparing cermet and ceramic specimens for other studies at the school. The heating source is a 20-kw spark-gap high frequency converter and the graphite die serves as the susceptor.

Pressure is applied by a small hydraulic piston and oil pumped to it at 1000 psi. The piston is mounted on a steel frame that also contains the graphite die and plungers. The die is made to form four specimens simultaneously. Grade AGMT graphite, National Carbon Co., was used for the die parts to withstand the 2000 to 8000 psi pressures used during the pressing of such materials at TiC.

### Boron carbide discussed

"Boron Carbide as a Base Material for a Cermet," was discussed by H. J. Hamjian and W. G. Lidman of the Cleveland Laboratories of NACA. Their work is aimed at developing materials having high strength, density ratios and thermal shock resistance for use in jet engines at temperatures over 1800°F. Boron carbide, because of its low density and high refractoriness, was selected for use with Co, Fe, Ni and Cr metals. After preliminary trials where a small piece of metal was set in a depression on a disk of $B_4C$ for heating to determine the wetting and adherence characteristics, the combination of Fe and $B_4C$ was selected.

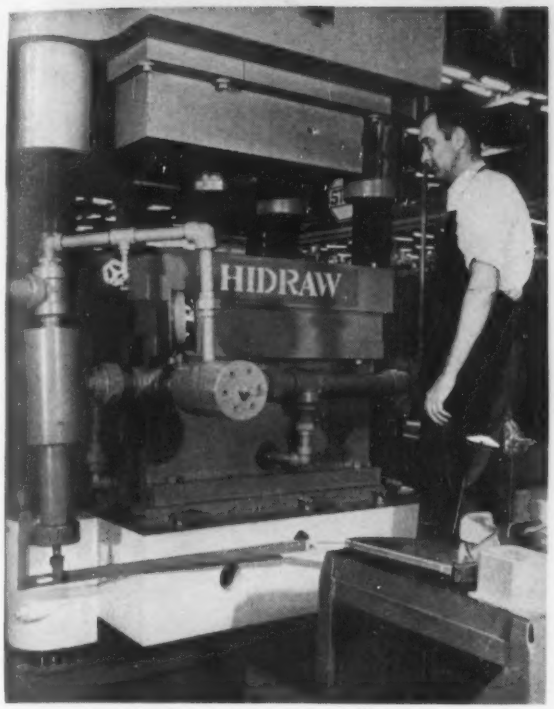
Preliminary trials consisted of heating the piece of metal on the boron carbide in pure dry helium for 15 min at a temperature 300°F above the melting point of the metal except in the case of nickel where the temperature was 600°F above the melting point.

### Fe-$B_4C$ cermet is promising

The Fe-$B_4C$ body selected for further study contained 36 pct by weight or 15 pct by volume of iron and was formed by hydrostatic pressing at 10,000 psi, then sintered at 3700°F for 1 hr. Modulus of rupture tests on this mixture show that the pure hot pressed boron carbide is somewhat stronger than the Fe-$B_4C$ cermet; however the pure $B_4C$ does not resist thermal shock satisfactorily. The cermet has better oxidation resistance at 1600°F than does the pure carbide, but $B_4C$ is better at 2000°F.

The use of plain $B_4C$ as a jet engine material is probably not possible. However, the cermets do appear to have possibilities, especially because of their strength-density ratios.

# New drawing process announced




A new method of rubber-pad forming and drawing of sheet metal has been announced by the Consolidated Vultee Aircraft Corp. Known as the Hidraw process, it was developed by Convair's Fort Worth, Tex., Div. and has been in use there for over 2 years.

The Hidraw process utilizes a tough rubber pad in a restrictor box on the upper platen of the press, with a pressure pad and a moving punch on the lower platen. The most costly part of the conventional drawing tools, the female die, is not needed. Cost of punches and pressure pads runs from 33 to 75 pct less than conventional steel dies for the same parts.

Metal to be formed is placed on top of the punch and pressure pad. The press lower platen is then raised until the metal is pressed against the rubber pad. As the metal is confined against the rubber and the pressure builds up to several thousand psi, the rubber forces the metal down and around the pattern of the punch. The pressure pad, supported by pins resting on hydraulic cylinders set to a predetermined pressure, controls the shrinking of the material during drawing.

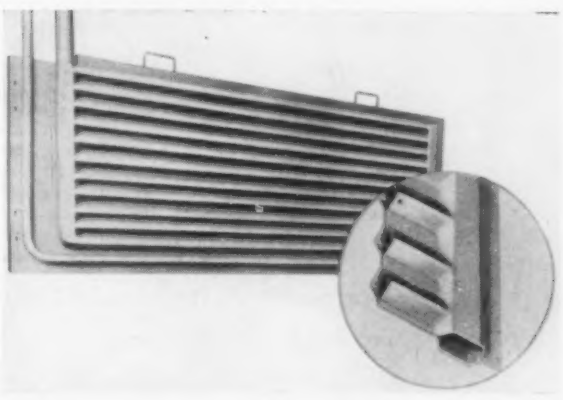
Any thickness of material can be drawn on the same set of tools. Different thicknesses can be drawn simultaneously. Parts can be drawn with smaller radii than are possible with conventional dies. Thinning around punch radii is only 2 to 6 pct. Springback is said to be eliminated or reduced to a minimum. Another advantage claimed for this process is that setup changes can be made in a short time, and time needed to train operators is also small.

# Tank heater uses 60 pct less steel

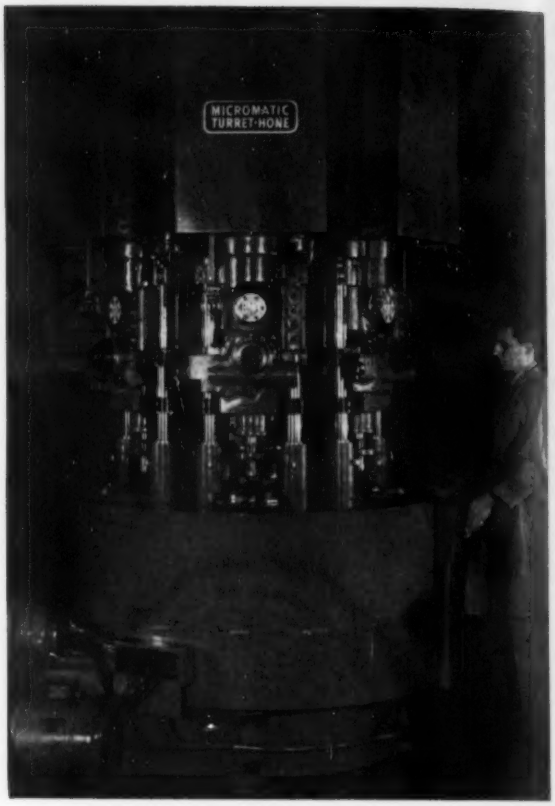
Only 95 lb of steel make up a 22 in. x 119 in. "Platecoil" used for cooling or heating tanks. An equivalent 2 in. pipe coil having the same surface area requires 239 lb of metal, a difference of 144 lb. Made by Kold-Hold Mfg. Co., Lansing, Mich., the sheet steel unit is made of embossed metal plates in such a way that channels are formed. The heating solution or coolant flows through these passages.

It is stated that this type of construction gives the plate type unit more prime heating surface in a given area than that obtained from pipe coil. As a result, smaller, more compact flat coils heat a tank of liquid in less time.

The newer device also weighs about ½ as much as an equivalent pipe coil and are easily installed or replaced in little time without dumping the liquid in the tank being heated or cooled. Cleaning is also said to be a quicker, easier operation.



# TURRET HONE developed for high production




OPERATING the turret hone. Operator slips part in fixture as it passes him, after removing completed part. Machine hones 700 parts per hr.

By W. G. Patton
*Detroit Editor*

A new 6-station turret-type hone developed by engineers of Micromatic Hone Corporation, Detroit, has a capacity of more than 700 pieces per hour. It will be used by several of the major car producers to hone connecting rods and rocker arms. At the present time, consideration is also being given to the design of similar machines for the honing of bushings, bearings and small gears.

This is the first turret-type machine built by Micromatic. It is made up of either four or six stations rotating around a fixed base. The operator slips the parts into the fixtures as the individually controlled and driven units pass by.

A new six-station turret-type hone has been developed for the auto industry. Its capacity is more than 700 pieces per hr. Present machine is designed for honing connecting rods and rocker arms. Similar machines may be designed for bushings, bearings and small gears.

Simple fixtures permit rapid loading and automatic checking of location.

As a part leaves the loading position, the fixture plate raises, positioning the part on the tool. Simultaneously, the spindle commences reciprocating and the tool expands to proper size.

### Tool collapses

After the part is honed to the desired size, Microsize control automatically stops expansion of the tool. After a brief adjustable run-out, the tool collapses. At this point in the cycle, the fixture moves down and away from the tool. The operator unloads the finished part and reloads the station which continues through another cycle without interruption. A finish-honed connecting rod can be taken off the machine every 5 sec.

Several unusual safety features have been built into the new machine. For example a switch, interlocked with the hydraulic cylinder that raises the fixture, controls a red light on each station. If a part is not properly located, the fixture does not move into honing position, and the red light stays on. This prevents tool breakage, shearing of stones and other damage to the machine. The light remains on throughout the cycle, warning the operator that the piece has not been honed.

Another feature of the machine is flexibility. Each station is individually controlled and operated. Thus it is possible, if desired, to operate any number of stations from 1 to 6. Idle stations do not interfere in any way with the operation of the active stations.

The loading fixture for the Turret-Hone consists essentially of two parallel steel plates and a base plate. If the part is properly located, an electrical contact is made permitting the fixture to rise into position as it leaves the loading station.

Following initial expansion of the honing tool to rough size, the part is securely clamped in place. Raising of the fixture and clamping the part are accomplished by a hydraulic cylinder.

### Heads expand to size

After the fixture is positioned, the heads start their rotation, expanding automatically to size. Movement of the cone controlling the expansion of the tool is actuated by a hydraulic piston. This piston travels a set distance at the beginning and end of each cycle. Movement of the cone during the honing cycle is accomplished by an adjusting sleeve in the spindle.

To keep the tool cutting efficiently, pressure must be kept on the abrasives throughout the cycle. The tool is expanded at a constant rate. At the end of cycle, the tool automatically contracts to approximate rough bore size and compensates for abrasive wear.

Gaging of the bore and control of the expansion and collapse of the tool are entirely automatic. In this machine, the 5-stone tool functions as an automatic plug gage. A thermo-plastic shell is molded about three sides of the stone to form a stone-holder. The plastic extends beyond the abrasive, forming a gaging tab on each end of the stick.

As the tool rotates and reciprocates, the cutting-faces of the sticks wear down. But when in contact with the bore, the diameter of the stones and the plastic is always the same.

A gage ring is mounted above the tool, which strokes through it. The I D of the carbide insert in the gage ring is equal to the low limit of the desired bore size. The ring is positioned so that the upper plastic tabs enter the ring at the top of each stroke. The ring itself is permitted to float and align itself with the tool, while being held from rotating by means of a leaf spring.

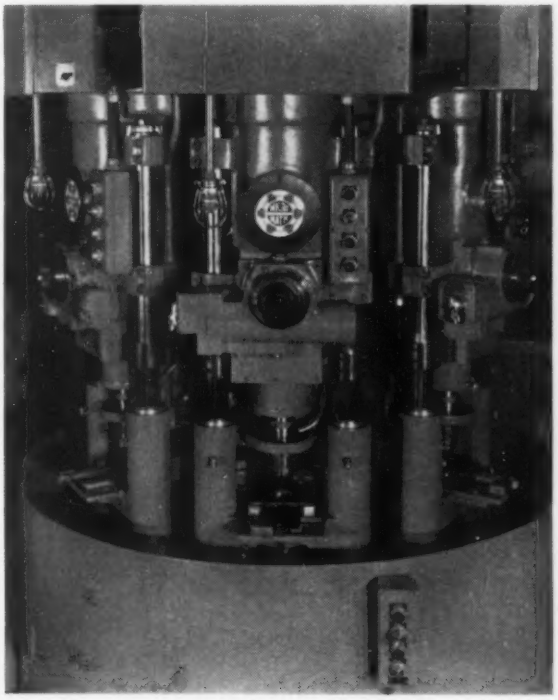
### Close tolerance held

As the tool cuts and expands, the tabs contact the gage ring. When the friction between the tabs and the spring is great enough, the spring flexes, making contact with a stop pin. This initiates the "to size" signal, which starts the sequence of operation that ends the cycle.

Automatic gage ring Microsize control is held to less than 0.0003 in. on the diameter. This control can be adapted in this machine for diameters up to 4 in. and lengths to 2½ in. The machine can be adapted for automatic loading and ejecting.

A lot of 18 machines for automobile plants is being built to recommended JIC standards governing electrical controls, hydraulic system and other features. Worn stones can be replaced individually, or by presetting and replacing the entire tool.

CLOSEUP showing connecting rods in place in turret hone fixtures. Below and to left of pushbuttons is Microdial which sets size to which tool expands for honing.



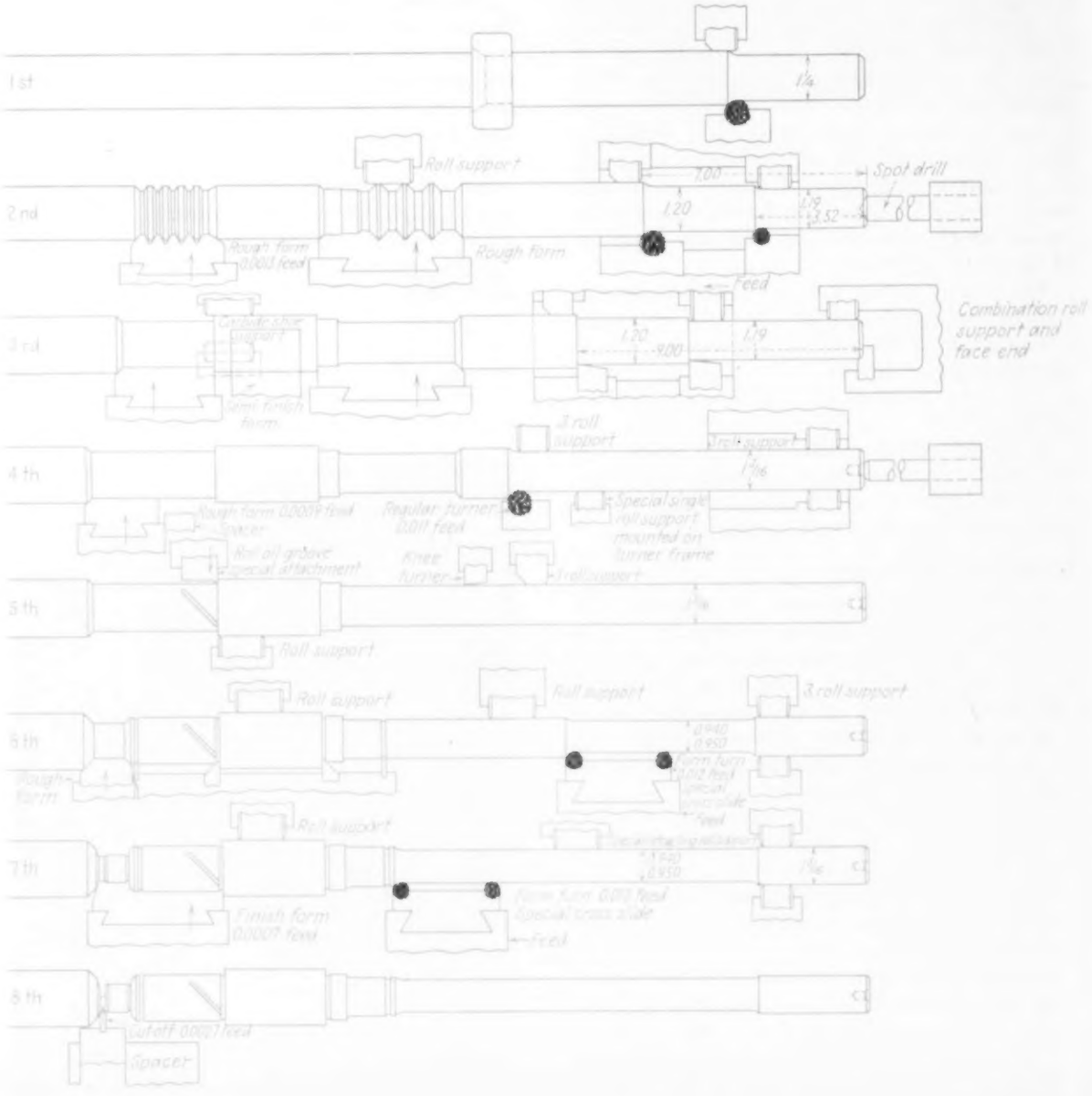
# AUTOMATICS USE round insert tools

An unusual automatic screw machine setup at Ford uses 11 round insert tools and 43 support rolls to machine transmission main shafts. Seven lb of metal are removed from the 24-in. long shaft in 80 sec.

**By George Elwers**
*Machinery Editor*



FIG. 1—Layout of Conomatic tooling for Ford transmission main shaft. Three more round tools have been added since this layout was drawn.



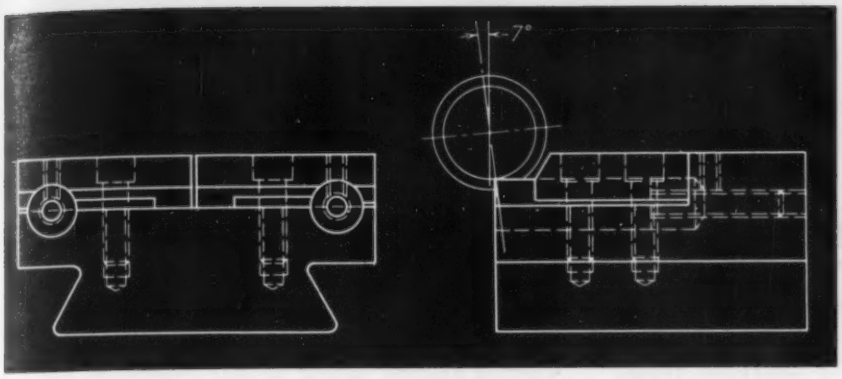



FIG. 2—Typical tool holder designed by Ford for main transmission shaft machining on automatic screw machines.

The Mound Road Div. of the Ford Motor Co. has pioneered a new setup in the use of automatic screw machines.

The interesting feature of the operation is that approximately 7 lb of stock is removed in the machine cycle time of 80 sec with the aid of round insert tools. The machines are 8-spindle automatics that have been developed and set up to completely turn a transmission main shaft of 24-in. overall length from 1 43/64-in. diam bar stock. The machining includes complete forming operations and rolling of a helical oil groove.

The bar stock is fed to the stock stop hydraulically and in the same position that the cutoff occurs. A hydraulic pickoff attachment delivers the finished piece to a tray in front of each machine through openings in the machine frames. This is due to the unusually long piece to be machined.

A female center on the universal joint end and a male center on the pilot diameter or cutoff end are included in the machining operation. This method eliminates an additional operation of centering and improves quality.

When the new process was planned it was decided to change, wherever possible, from square tools to round tools, thereby increasing tool life considerably and eliminating part of the machine down time for tool replacement.

On the specially-designed cross slide a form turned diameter, 13.5 in. long, is machined. This work is performed by two round tools in holders on two stations that plunge feed to depth and turn for 2¾ in.

The new process makes use of 11 round tools and 43 support rolls. Eight round tools show in Fig. 1. Three additional tools have been added since this layout was drawn.

The round tools are Tantung, others are high-speed steel. The round tools are designed with a dished head. On the ¾-in. diam tool, for example, the depth of the depression is about 0.088 in. There is a flat rim 0.005 in. wide around the circumference of this depression.

Fig. 2 shows the design of one of the round tool holders. It is much like a tool holder for square tools. Fig. 3 shows two holders, each with a single tool in place, on turret slides.

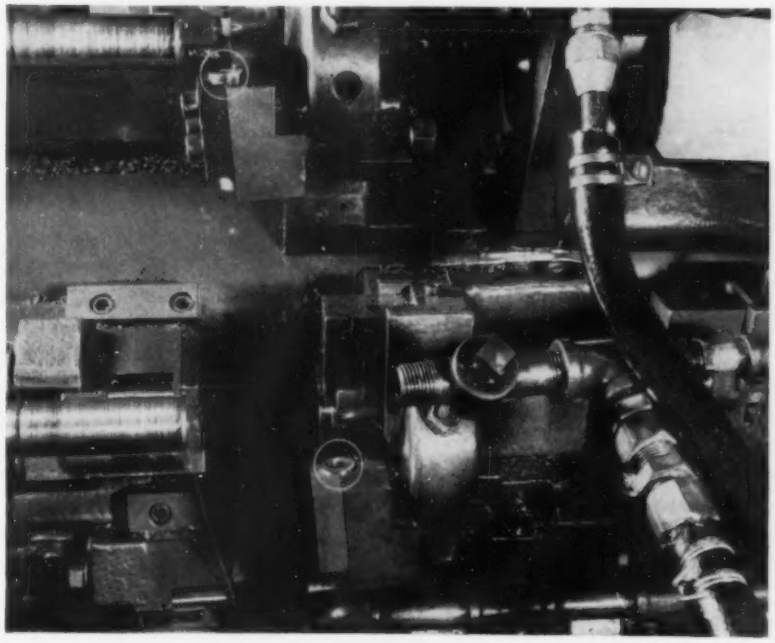
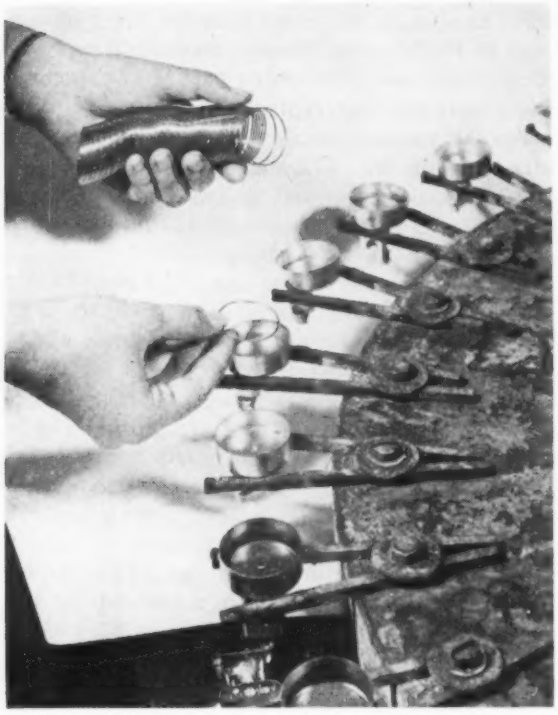


FIG. 3—Part of Conomatic tool area as set up for machining Ford transmission main shaft. Two round tools show inside white circles.

# Notch-coil brazing rings boost production

Notched-coil silver brazing and soldering rings raised brazing output of electrical transformer connectors by 62 pct over previously used machine-wound individual rings. Looseness and tangling of individual preforms during handling limited brazing output to 360 assemblies per hr though the gas-air heating equipment used was designed for a minimum of 500 pieces per hr. Use of notched-coil rings eliminated the handling problem and raised the rate to 560 assemblies per hr on this heating unit.



NOTCH-COIL rings are stored and handled in coil form, but break easily where notched when detaching for use.

Rings are wound from continuous wire by the Lucas-Milhaupt Engineering Co., Cudahy, Wis., in job-determined wire thicknesses and diameter according to individual specifications. The wound coil is then slotted along the outer diameter to permit fast, easy detachment of rings individually from the coil without tangling, distortion or breaking. Detaching a ring from the coil and placing it on the workpiece is performed in one operation.

Preforms are stress-relieved and available in gap form for easy compression into inner diameter grooves, and in lap and butt form for keyed and non-keyed outer surface applications. Beside offering handling and storage savings and convenience, rings are said to be particularly suitable for exacting applications where the nature of the joint and depth and shape of groove limit the amount of silver alloy to be used. In such applications, specified wire thicknesses and diameters assure that only necessary measured amounts will be used. This can result in material savings and the elimination of post-brazing machining of spillage associated with hand-fed and less exacting machine-wound rings.

# *Zinc alloy specifications tabulated*

Defense contractors may run up against any of several different specifications for zinc diecasting alloys. The table indicates the specification to which the alloys conform. The brand names are those of the New Jersey Zinc Co. Other producers identify their alloys similarly.

The table includes the existing specifications of the American Society for Testing Materials and the Society of Automotive Engineers, as well as those of the Navy, Army and Federal Government. The Horse Head Special Slab Zinc meets ASTM specifications for commercial diecastings, as shown, and is also within the limits of the ASTM "Tentative Specifications for Zinc Base Alloys in Ingot Form for Diecasting."

STANDARD ZN ALLOY SPECIFICATIONS

| New Jersey Zinc Co. | Federal | Navy | Army | ASTM | SAE |
|---|---|---|---|---|---|
| Zamak-3 | QQ-Z-363 | 46 Z 2b | 57-93-2A | B86 XXIII | 903 |
| Zamak-5 | QQ-Z-363 | 46 Z 2c | 57-93-2A | B86 XXV | 925 |
| Horse Head Special Slab Zinc | QQ-Z-351a | QQ-Z-351a | QQ-Z-351a | B6 Special High Grade | None |

# news of industry

## "Free" Steel Shrinks Nearer 25 Pct of Total Output

**NPA raises July set-asides . . . Autos, less essential hard goods won't get more than 2 million tons . . . First NPA allocations coming . . . CMP demands top output**—*By Karl Rannells.*

Washington — Developments on the eve of the first allocations under CMP continue to support the belief (THE IRON AGE, Apr. 26, p. 15) that the supply of free market steel may shrink to as little as 25 pct of production.

For automobiles and other less essential consumer durables, it is now admitted that for the third quarter there will be no more than 2 million tons of total production available to them. This is roughly about 10 pct of estimated overall output of steel. Copper and aluminum cuts will likely be deeper.

### Announce Allocations

Last week, DPA sent its third report on requirements and determinations for the third quarter to NPA. The latter agency was preparing to announce its first steel allocations early this week. These were expected to be largely for military and direct defense claimant agencies.

Edwin T. Gibson, DPA head, said that requests for third quarter steel from the military and essential industries added up to one-third more steel than is being produced—about 135 pct, even after duplications and errors had been struck out.

DPA currently believes this to mean that steel for consumer durables will be knocked back by one-third from pre-Korea consumption levels. Figures for copper and aluminum are being worked out, but it is believed by DPA that the cutbacks for these will be more severe, possibly to 55 pct of pre-Korea levels for copper and about the same for aluminum.

### Careful Screening

The present plan boils down to this: Military and defense programs will be carefully screened and held to an actual usage basis by quarters rather than by probable needs; programs directly relating to and supporting defense programs will be trimmed here and there, even slowed down considerably, and not be allocated more steel than can definitely be used; a broad "intermediate" group of industries, such as makers of textile machinery and other capital equipment for producing civilian goods, not directly related to defense but considered essential, will be limited at least to 85 pct of requirements.

### Two-Thirds of Supply

This action, DPA believes, together with further screening by NPA, program by program and industry by industry, will leave manufacturers of less essential hard goods something like two-thirds of their pre-Korea supplies of steel.

In the meantime, in telegrams to the steel industry, NPA directed that steel set-asides be increased

*Turn Page*

### Keeping Up-to-date

**Locating new sources of potential subcontract business and keeping up with government regulations are two big headaches for businessmen today. Controls Digest and Subcontracting News, a feature of THE IRON AGE, keeps you posted on latest Government orders related to the industry. Here too, you'll find interpretive information on subcontracting, awards to prime contractors, other news. (See pp. 114, 115.)**

### Break Ground for Taconite Plant

**Duluth** — Beneficiated taconite to fill the breech of dwindling high-iron content ores was a step closer to reality this week.

U. S. Steel Corp.'s Oliver Iron Mining Co. started work on a multi-billion dollar pilot taconite beneficiation plant at Mountain Iron, Minn. Plant output when completed in 1952 is expected to be 500,000 tons a year.

The plant will chew up 2 million tons of taconite rock each year. The ½ million tons of concentrates will be shipped to an agglomeration plant at Virginia, Minn. There the powdery ore will be made into "eggs" suitable for blast furnace use.

### English Cut Machine Tool Use

**London**—English civilian users of machine tools face a 35 pct cutback during the next 18 months. The cut they take will help defense contractors. Hardest hit will be the car and truck makers.

# INDUSTRIAL SHORTS

**On The Board** — RUST FURNACE CO., is designing a car-type furnace for installation at the Chicago plant of the Chicago Bridge & Iron Co. The furnace will be used primarily to heat plates before pressing. Natural gas will be used as fuel.

**"Dog Tags"**—Identification tags similar to the famed "dog tags" supplied to Army and Air Force personnel are now available. The identification division, BOTTLESCOPE MFG. CO., Lansdowne, Pa., offers a plan whereby the entire personnel of a plant may be "tagged."

**Land Lease** — VANADIUM CORP. OF AMERICA has completed arrangements to lease 41 mining claims extending over 800 acres located in the Long Park area of Montrose County, Col. This provides additional uranium-vanadium ore reserves for operation of the company's nearby Naturita mill.

**School Days**—The service department of CATERPILLAR TRACTOR CO., Peoria, Ill., will conduct three schools for the Corps of Engineers. About 90 men, selected on a basis of their experience, will attend the program, which includes 2 weeks on Diesel engines, 3 weeks on transmissions, and 1 week on the rehabilitation of parts.

**Corporate Change** — Following the retirement of George J. Bleim from Bleim-Sullivan Steel Co., the company's name was changed to SULLIVAN STEEL CO., Toledo.

**Research Conference**—The AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE is sponsoring the Gordon Research Conference. Attendance is by invitation and is normally restricted to about 100 persons. Research workers in corrosion who are interested in attending should apply to Dr. W. George Parks, Rhode Island State University, Providence, R. I. Date: July 23 to 27.

**Posthumous Award** — The 1951 James Turner Morehead Medal of the International Acetylene Assn. has been awarded posthumously to M. Keith Dunham, late president of NATIONAL CYLINDER GAS CO., Chicago. The award was made in recognition of his inventive pioneering and administrative leadership in the operating, engineering, and economic aspects of the oxy-acetylene industry.

**Appointment**—NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y., have appointed the Austin - Hastings Co. of Cambridge, Mass., sales representatives for their entire line in all New England, except Connecticut.

**Reheating Furnace**—Salem Engineering Div. of SALEM-BROSIUS, INC., will build an 80-ton pr hr, triple-fired reheating furnace for the Lone Star Steel Co.'s new plant at Daingerfield, Tex.

**Army Orders**—The mechanical goods division, U. S. RUBBER CO., has received orders totaling more than $30,000,000 for the manufacture of self-sealing fuel cells for B-29 and B-47 bombers and rubber tracks for tanks and other tracked Army vehicles. Both products will be produced in the division's Fort Wayne, Ind., plant.

**National Contest** — A national safety contest sponsored by STEEL FOUNDERS' SOC. OF AMERICA is open to more than 150 member steel foundries. The contest will be conducted during the months of June, July and August, a quarterly period during which precedent indicates accident frequency rates tend to be high.

**Plant Construction** — LINK BELT CO. has started construction of an engineering and manufacturing plant containing 300,000 sq ft of floor space for the production of elevating, conveying and processing machinery at Colmar, Pa.

considerably to meet July rated orders.

Also, steel producers were warned that these DO-rated programs may require even larger percentages of production during August in order to meet the increasing defense demands.

New July set-asides follow:

| Product | Percent |
|---|---|
| Ingots | 15 |
| Billets, projectile and shell quality —8 pct of base period tonnage figure for blooms, slabs and billets. | |
| Blooms, slabs and billets (except projectile, shell quality) | 52 |
| Tube rounds—by directive | |
| Sheet bar, skelp | 10 |
| Wire rod | 60 |
| Heavy structural shapes (heavy), steel piling | 65 |
| Plates, rolled armor—by negotiation | |
| Plates, all other—by directive | |
| Rails, standard and all other, joint bar, tie plate, track spikes | 10 |
| Wheels, rolled and forged, axles | 95 |
| Bars, hot-rolled, projectile and shell quality—12 pct of hr bar base period tonnage figure | |
| Bars, hot-rolled, other | 45 |
| Bars, cold-finished | 50 |
| Reinforcing bar | 65 |
| Standard pipe | 90 |
| Oil country goods | 110 |
| Line pipe | 85 |
| Mechanical tubing | 45 |
| Pressure tubing | 70 |
| Wire, drawn, low carbon | 50 |
| Wire, drawn, high carbon | 60 |
| Wire, nails and staples | 25 |
| Wire, barbed and twisted | 35 |
| Woven wire fence, bale ties | 10 |
| Tin mill blackplate, tin and terneplate, hot-dipped, electrolytic tinplate | 10 |
| Sheets, hot-rolled | 55 |
| Sheets, cold-rolled, sheets, galvanized | 40 |
| Sheets, all other, coated | 25 |
| Sheets, enameling | 10 |
| Electrical sheet and strip, low grade | 25 |
| Electrical sheet and strip, medium grade | 70 |
| Electrical sheets, high grade | 80 |
| Strip, hot-rolled, strip, cold-rolled, welded wire mesh | 35 |
| Netting | 10 |
| Wire rope and strands | 60 |

## U.S. Lists How Much of Costs It Will Underwrite for Materials

**Washington** — How much the government will put into the pot for exploration and development of mining deposits of critical and strategic minerals went on record last week. Under the Defense Production Act, $5 million is available for the fiscal year ending June 30, 1952. The money will underwrite from 50 to 90 pct of exploration and mining costs of promising projects

Ratios of U. S. underwriting of costs follow: Chromium, copper, fluorspar, graphite (crucible

grade), iron ore, lead, molybdenum, sulfur, zinc and cadmium —50 pct.

Antimony, manganese, mercury, and tungsten—75 pct.

Spinning-grade asbestos, beryl, cobalt, columbium, tantalum, corundum, cryolite, industrial diamonds, kyanite, mica, monazite and rare earth ores, nickel, the platinum groups, quartz crystals, talc, tin and uranium—90 pct.

Those having property for which federal assistance for exploration is desired should apply to the Defense Minerals Administration, Interior Dept., Washington, for form MF-103.

# Oil Men May Get Pipe by '52 from Lone Star

**New integrated plant will have four openhearths . . . Capacity for finished steel pipe set at 350,000 tons . . . Mill is a marketing natural . . . Raw materials nearby**—*By Gene Beaudet.*

**Lone Star, Tex.**—Faced with an enormous shortage and with little relief in sight, consumers of oil country tubular goods are anxiously watching Lone Star Steel Co.'s progress in constructing a fully integrated steel mill to produce steel pipe.

Lone Star's new plant will include four openhearth furnaces, a slab and plate mill, hot strip mill, pipe mill and electric weld facilities. Openhearth capacity will be 500,000 net tons of steel ingots per year while production of finished steel pipe is estimated at 350,000 net tons annually.

### Pipe by 1952

Grading and leveling of the plant site at Lone Star, Tex., has already started. Structural steel for buildings will arrive in August. If construction continues on schedule, Lone Star will be making steel in less than 18 months and shipping pipe before the end of 1952.

While the construction of a steel mill has been planned by the company since its formation, financing has always been a major problem. But early this year, the Reconstruction Finance Corp. authorized a loan of $73,425,201 for the mill. Company officials anticipate little difficulty in obtaining materials and equipment to build the mill because of its essential character.

From a marketing standpoint the new mill will be a natural. In its prospective marketing territory which includes Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma and Texas, there is at present no other producer of oil country tubular goods.

Last year this area accounted for 60 pct of all the oil and gas wells drilled in the entire country. During the next 5 years, company officials expect to be able to supply only 15 to 20 pct of the demand for casing, tubing and line pipe in the area. Another bright aspect of the marketing situation is that electric welded pipe, if made to proper specifications, is as satisfactory as seamless pipe for wells not exceeding 8000 ft. During the first 8 months of 1950, 70 pct of the wells drilled in the area didn't exceed that depth.

Natural gas will be the principal fuel used. The capacity of the combination 45x80-in., 2-high slabbing and plate mill will be more than enough to take care of the openhearth production. With the addition of a roller-leveler and a rearranging of conveyors, Lone Star will also be able to turn out semifinished plate for ships, storage tanks, etc.

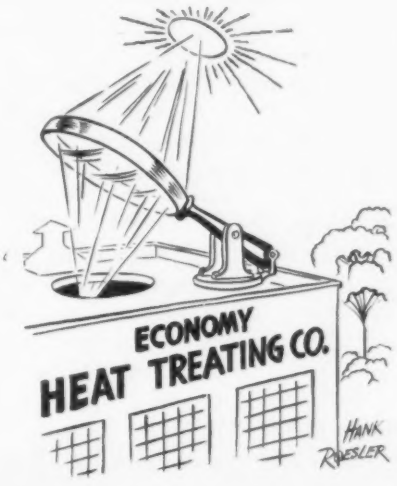



Plate mill production will be put through a 27x49x72-in., 4-high hot strip reversing mill where it will be rolled into coils of skelp. Skelp from the strip mill will then be made into pipe by forming, welding, heat treating and other finishing operations by two pipe mills, one of which will make pipe 4.5 to 16 in. OD and the other 2 in. to 6.625 in. OD.

### Arrangements for Power

Lone Star has entered into a 25-year contract with the Southwestern Gas & Electric Co. The utility will construct a 40,000-kw generating plant which will supply all power and energy needed.

The company's ore reserves containing about 40 million gross tons of limonite and siderite are approximately 20 miles from the plant. These low grade ores are beneficiated to produce blast furnace quality ores which compare favorably in metallics and cost with ores in other sections of the country.

Coal reserves located in McAlester and McCurtain, Okla., total roughly 22 million tons. Limestone of metallurgical quality is now being obtained from Chico, Tex., about 50 miles north of Ft. Worth. All in all, raw materials seldom have to be shipped more than 250 miles.

Once the mill is in operation, Lone Star will have little merchant pig iron left over for sale, unless the use of a high scrap charge in the openhearth proves economical.

## Pennsy to Order 132 Diesels

**Philadelphia** — Pennsylvania R.R. will soon place orders for 132 diesel locomotives at a cost of $45 million, according to Walter S. Franklin, president. The railroad already has 1036 diesels in service or on order.

# Uncertainty Hems In Structural Steel Field

**Vitally needed for new defense plants . . . Fabricators won't bid on new building because of shortage . . . 100 pct control in the books for second half**—*By Bob Hatschek.*

**Philadelphia** — Structurals, vitally needed for plant expansions in the growing defense effort, ride high on the list of scarce steel items. Before arms can be made, plants must be built and the nation is going at that like a greyhound after a bunny. And this is causing one of the biggest rushes for structural steel in history.

### Watchdog on Structural

Some fabricators have refused to bid on new jobs because of the scarcity. One large fabricator is so uncertain of getting material from the mill that he will only promise to deliver "6 weeks after the steel is received" on DO-rated orders. Another quotes October delivery for rated jobs. Non-rated work must wait 12 to 19 months for structurals.

Most recent attempt by the National Production Authority to match available supplies to vital construction is the May 3 Amendment to order M-4 which adds to the prohibited building list and requires NPA blessing on any construction job that takes more than 25 tons of structural steel and concrete reinforcing bars.

### Few Road Jobs

What it amounts to is that practically complete allocation of structural steel is already with us. The Controlled Materials Plan will make it official with 100 pct government control on this item at least for the third and fourth quarters, according to a high NPA official.

The M-4 amendment has some of the fabricators guessing—they don't know whether or not to go ahead with jobs they already have contracted for. It has already cut deeply into the number of new inquiries; one company reported fewer inquiries last week than in any similar period they could recall and other firms substantiated this.

Despite recent reports that the government would schedule 151,000 tons of steel for June rolling of structurals for highway work alone, there have been very few new road jobs during the past few weeks. And those required only small quantities of structural steel.

CMP cannot cure the situation; it can only allot material for the *most* essential construction jobs first. The plain fact is that there just isn't enough structural steel available to build all of the already approved plant expansions simultaneously. The best that administrators of the Plan can do is organize the most efficient waiting line possible.

All industrial plants require the products of other plants and the manufacturing chain should be closely scrutinized by the government to assure that first things get done first. Industrialists should also consider this and their own position in the pattern. Enough structural steel to satisfy everyone cannot be had now.

# Industry Whittles at Pricing Regulations

**While businessmen fume at the short time to gather a mass of pricing reports for the May 28 deadline of CPR 30 and 22, their committees are seeking some relief in the orders.**

**Washington**—On a fast trot down the last mile to new controlled prices under CPR 30 and 22, industry is slave-driving its clerks to meet the May 28 deadline for reports that will either roll back prices or push them up. While industry fumes at the little time for a big job, its representatives are chasing Washington officials to get some of the hardships deleted from the pricing orders.

That industry's insistent drive to get pricing justice has swayed Washington is evident by issuance of several relief orders. General Overriding Reg. 10 allows manufacturers who cannot operate profitably under the price freeze to seek a profitable level. CPR 22 was also amended to make price calculating less difficult.

### Machine Tool Problems

Supplementary Reg. 1 to CPR 30 gives machinery makers the alternative of adjusting Jan. 25 ceilings instead of going back to pre-Korea prices. Machinery and related products are exempt from price controls.

Machine tool builders have been pounding at OPS to have a heart on CPR 30 which forces them to roll prices back to pre-Korea levels, allowing for higher labor and materials costs but not for overtime and overhead rises. The Machine Tool Industry Advisory Committee's subcommittee is now tracking down pricing problems and will make recommendations.

### Expect Time Extension

Makers of brass mill products are asking OPS for a dollar-and-cents price regulation and release from the general law. They say CPR pricing does not permit them to show substantially higher costs of tin, nickel, and other metals. Industry men and OPS are trying to arrive at a relief regulation. Makers of screws, bolts, nuts, and solid rivets have asked Washington for their own tailored regulation.

OPS officials have consulted with the merchant pig iron field on the feasibility of rolling back prices to the pre-Korea level. A roll-forward is possible. Some scrap metals men seek a single

price for openhearth grades of iron and steel scrap as a form of price relief. Cast iron scrap users are urging a pricing revision also and water carriers seek relief.

To date OPS has received thousands of reports from early-bird firms whose job was less complicated than most. Most of these price reports call for rollbacks and only about 3 pct raise prices. Overall fluctuation of industry's prices is expected to be minor. The chore of meeting the deadline on pricing reports is to a great many firms an insurmountable obstacle. OPS is expected to grant time extensions.

The haste and confusion in which some firms are working leaves wide margin for pricing errors. These will crop up later and create more paperwork for both Washington and industry. More and more industries will be coming under regulations tailored to specific needs.

Later trend of the pricing controls will be to squeeze down profits as prices are curbed and costs of labor and some materials inch up and up.

## More Hot Workable Alloys

**Reading, Pa.**—Carpenter Steel Co. reports it has discovered a method of altering high alloy, corrosion resistant and heat resistant steels so that they can be readily hot worked. This is done by addition of the rare element cerium, heretofore used in lighter flints.

The company believes this discovery will permit the steel industry to produce more hot workable alloys in bar, rod, sheet and tube forms for heat and corrosion resistant applications such as jet engine parts. The process has been made available to other companies through licensing agreements.

## Appointed Research Unit Aide

**Chicago** — Dr. Julian Glasser, physical chemist at Armour Research Foundation of Illinois Institute of Technology, has been appointed technical aid on titanium and zirconium research for the National Research Council's metallurgical division.

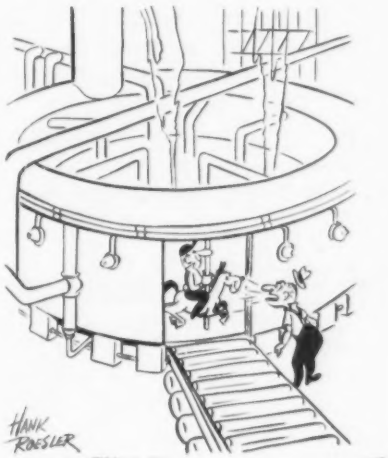
# Furnace Builders Learn CMP Facts of Life

**Hold 21st annual meeting . . . Washington subjects dominate discussions . . . CMP drawback halts delivery date quotes . . . Nickel may govern basic metals allocations**—*By D. I. Brown.*

**Hot Springs, Va.**—Industrialists attending the 21st annual meeting of the Industrial Furnace Manufacturers' Assn. here last week came to learn. Discussions were dominated by a trio of Washington subjects, CMP, CPR 30, and the future of nickel supplies. The furnace builders listened as avidly as a Phi Beta Kappa college student on the last lap of the term.

Charles Kentnor, Jr.

A drawback of CMP and a slip-up in NPA's nickel limitation order has hit furnace builders and makers of wrought nickel alloys. The CMP feature that has halted quotation of delivery dates on furnaces is lack of coordination between nickel allocations from NPA and those of basic metals under CMP. No provision is made in CMP for reporting actual tonnage of nickel needed for heat resistant castings, ribbon wire, bars, etc. Delivery quotations are difficult because builders are uncertain of receiving the right amounts of nickel.




"Just what's going on in that rotary furnace?"

Another popular subject was the slip-up in the nickel limitation order. While foundries are allowed 80 pct of former nickel requirements, no such provisions were made for makers of wrought nickel alloys.

Nickel cutbacks have stirred some serious problems in the furnace industry. It is estimated that 5 million lb of nickel will be needed this year for the Ni-Cr castings used in furnaces.

Nickel may govern the amount of steel, aluminum, copper shipped to the industry under CMP. A furnace builder may not get more tonnage of the basic metals than he has nickel with which to complete a given order.

### Speaks on CMP

C. L. Ipsen, chief, Industrial Heating Section, Machinery Div., NPA, spoke on "Operation CMP" during the Monday session. He reviewed the classification of heating equipment and how requests for materials should be filed. He instructed the group to file separately on electric and fuel-fired furnaces. These requests must be in by May 31.

The price ruling, CPR 30, has placed the industrial furnace makers in a tight spot—timewise.

If public form No. 8 is not filed by May 28 under present laws, a company is technically out of business. It is believed that OPS will have to permit at least 30 days more time for the furnace builders to figure out their base period prices and choose one of the three formula methods of pricing items not on catalog lists.

Henry Heyn, last year's president of IFMA, was succeeded by Charles Kentnor, Jr., newly-elected president of the association. James J. Walker, vice-president and sales manager of C. I. Hayes, Inc., was elected vice-president of IFMA for the next year.

# BITS AND BRIEFS

By Bill Packard

Trade associations more than ever proving useful vehicles for presenting industry views in Washington. United front and prestige of their associations proving especially effective for some industries in stating their case for relief on pricing and priority orders. Washington listening, too . . . Great Lakes Carbon Corp. starting construction of 40 new coke ovens at its St. Louis merchant coke plant . . . **Outlook for long-range scrap shortage causing some steel companies to take another look at their expansion plans. Some who are relatively well fixed for ore may decide it's better to build more blast furnaces and charge higher percentage of hot iron in openhearths** . . . Barry Pattern Works making steps for reconditioned White House from iron furnished by Sloss-Sheffield Steel & Iron Co. . . . NPA instructors offering 90-min course on CMP to industry and press in several cities. Course utilizes slides, charts and other visual aids, plus booklet "The ABC of CMP". Learning ABC's isn't too tough, but spelling requirements are difficult . . . **Canadian Industries Ltd. building new plant at Copper Cliff, Ont., to make liquid sulfur dioxide. They'll use by-product gas from oxygen flash smelting process recently developed by International Nickel Co.** . . . Some sources in rubber industry believe autoists will get their fifth tire back by fall—unless officials decide its return would cause a psychological let-down . . . Cliff Simmons, president Universal Die Casting & Mfg. Corp., turning first ground for new die-cast plumbing hardware and commercial casting plant at Fowlerville, Mich. Called Utilex Mfg. Corp., new plant will operate as division of Universal . . . **Talk of freight car shortage dying down, but problem isn't whipped. Trouble will develop during fall harvest. Defense production will be bigger then—some will be shipped long distances. And some who have been out of coal market will be buying next winter's stocks** . . . H. K. Ferguson Co. will build Westinghouse Electric Corp's new electronic tube plant at Horseheads, N. Y. . . . Ohio Seamless Tube Co. planning $2.5 million expenditure to expand Shelby, Ohio, plant capacity 25 pct.

# Who Is to Decide a Fair Day's Work?

**Union claims American Steel & Wire cannot unilaterally set standards . . . Joint labor, industry search for acceptable formulas is stirred by awards**—*By John Delaney.*

**Pittsburgh**—A recent award by a 3-man board of arbitration in American Steel & Wire Co. cases called attention to the long search by the steel industry and the United Steelworkers (CIO) for a mutually acceptable definition of "a fair day's work."

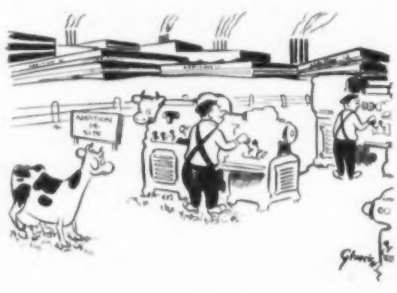
David J. McDonald, secretary-treasurer of the steel union, says the award means the company may not unilaterally determine the standards of a fair day's work and apply these standards in developing incentive rates.

If this interpretation is true, then the company could not, without violating the contract, continue to install incentive rates.

Some competent observers believe the arbitration board laid a great big goose egg—that the award means little or nothing. The board itself gave no interpretation.

### Need Basic Principles

The arbitrators reminded both sides of their obligation to formulate principles to serve as the basis for determining a fair day's work. The Joint Wage Rate Inequity Negotiating Committee, composed of union and industry representatives, has been struggling with this task since 1946.



A meeting of minds on these principles would eliminate a lot of friction between union and industry. Such agreement is prerequisite to ultimate elimination of wage rate inequities. First half of this job was establishment of job classes calling for standard rates of pay determined by requirements of various jobs.

Union and industry are trying to get together on how hard a man must work at his job to earn his standard rate. This is an absolute must in setting up incentive systems under which a worker is paid a bonus for working harder than he needs to earn normal pay.

### Cooper-Maloy Committee

Meanwhile, incentive systems are being put into effect regularly throughout the industry—with and without prior approval of the union. These incentives are worked up by company industrial engineers. The union may grieve if it feels the incentive rate does not provide "equitable incentive compensation."

The Joint Wage Rate Inequity Negotiating Committee is sometimes called the Cooper-Maloy Committee (for R. Conrad Cooper, of U. S. Steel Corp., and Elmer J. Maloy, of the steel union, co-chairmen). The union group walked out last fall but in the 1950 wage negotiations an understanding was reached, providing that union representatives resume negotiations.

The work of this committee includes on-the-job study of the

many different jobs in the industry in an effort to come up with standards for determination of incentive rates. Several units of U. S. Steel Corp. are being used as "pilot" plants for this phase of the work.

Once the principles are determined, they undoubtedly would be applied industry-wide.

## Industry Starts Preparing For Contract Renegotiation Later

**Companies circulate letters on new procedure . . . Past experience helps.**

New York—Industry is stepping in quickly to explain to suppliers and customers that a switch is being made from the soft Renegotiation Act of 1948 to the almost all-inclusive 1951 law. Companies are circulating form letters, stating that the transition is being made. Defense orders will now bear a prime contract number and whether they are subject to renegotiation later.

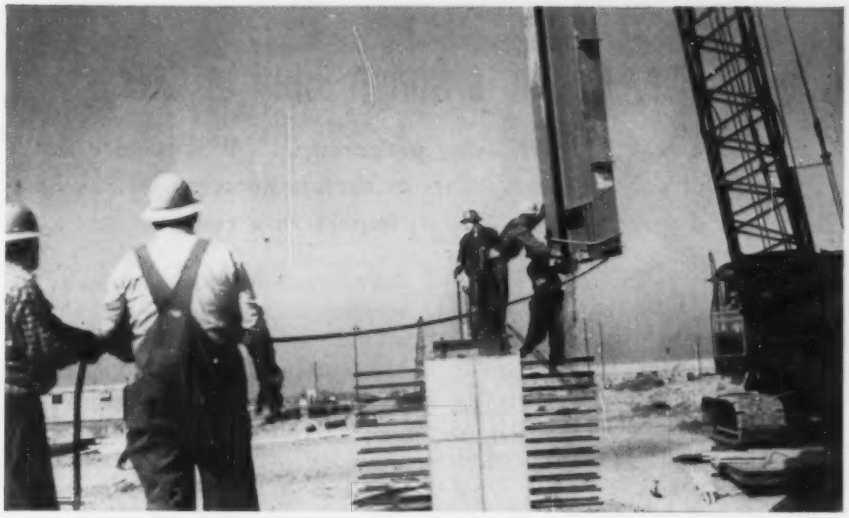
Made wary by World War II contract confusion, businessmen this time want to compile full statistics and reports for the 5-man Renegotiation Board. Ignorance last time as to what was renegotiable and what was not caught many with empty files. Now, experience is on industry's side.

### Slogan: "Be Prepared"

If it happens again to some, they will be in an assailable position before the board. Efficiency may be open to question and too much of profits may be declared excessive. The slogan should be: "Be Prepared."

Important to firms that must later sit in on renegotiation hearings are some of the reports businessmen should have in their portfolios: (1) By law, the board must compensate for efficiency. Be prepared to prove it. (2) Show reasonableness of costs and profits. (3) Show the value of your contribution to defense, including inventive and developmental contribution and cooperation with government departments. (4) Describe character of business, source of materials, manufacturing techniques, extent of subcontracting, etc.

Provisions of the 1951 Act apply to all defense contracts with government departments as specified in section 103(a) and to all related subcontracts. Covered are receipts and accruals on or after Jan. 1, 1951.



GOING UP: Bridgemen guide 8-ton column into place as U. S. Steel's Fairless Works starts to rise above ground at Morrisville, Pa. The column was set up in the batch annealing area of the sheet and tin mill.

## Fear War and Shortages Will Handicap the Galvanizing Industry

**Zinc users hold 33rd meeting . . . Allocation of defense-free zinc asked.**

St. Louis—Some producers of galvanized products fear wartime production restrictions and shortages. They regard them as handicaps to the continuing development of the industry's competitive position and to product improvement.

### Free Hand Wanted

Zinc consumers assembled here this week at the 33rd annual meeting of the American Zinc Institute. They heard Nelson E. Cook, general superintendent of galvanizing for Wheeling Steel Corp., urge that zinc be allocated under a fair system after needs of essential programs are met. He advocated that the steel industry be given an unimpeded hand in selecting uses for defense-free zinc.

Basis for his appeal is to hold the ground that has been gained through product improvement and continue the use of costly new equipment.

David Laine, secretary of the American Die Casting Institute, said die casters short on zinc face the problem of "staying alive" until their production is taken into the defense output fold. Rated orders are at a slowly increasing rate but are still negligible. Meanwhile, civilian business is very good—but precarious.

Government orders can be the damnation or hope of the die casting industry. Zinc restrictions may hurt, Mr. Laine said, but cutbacks in other industries will decrease accordingly orders going to the die casters. The surplus television set inventory has also cut orders.

He warned that many small die casters may be severely hurt by the fourth quarter unless NPA thinks up some remedial measures. However, Mr. Laine thought that 1951 production volume would not drop below that of last year with defense order help.

## Steel's Labor Force at Peak

New York—Iron and steel industry employment in March is estimated at a record of 663,100 persons, or 400 higher than in February and 47,500 higher than a year ago, reported the American Iron & Steel Institute.

# NPA to Cover Copper's Rough Road to CMP

**Amendment to M-11 being prepared . . . Will require brass mills to accept rated orders at certain percentages . . . Base period moved up to '51 . . . Import rate reduced.**

**Washington** — Producers have been notified by NPA that rated order ceilings for copper and copper base alloy for July shipment must be substantially increased.

Order M-11 will be revised to increase the ceilings for beryllium copper castings to 90 pct and all other castings to 75 pct of the first quarter 1951 shipments.

Brass mill products are to have ceilings for specific items increased as follows:

Unalloyed products — plate, sheet, strip, 60 pct; rod, bar, wire, 90 pct; non-standard seamless copper tube, 55 pct.

Alloy products — plate, sheet, strip, 75 pct; rod, bar, wire, 80 pct; Fourdrinier wire, 115 pct; seamless tube, 50 pct.

Standardized products — S P S pipe and type B tube, 20 pct; copper water tube, 55 pct; copper refrigeration, automotive tube, 55 pct.

Beryllium copper products — sheet and strip, 90 pct; rod, bar, wire, 90 pct; tubing, 50 pct.

### Move Up Base Period

Also to be included in the amendment would be a change of base period—from the existing first 6 months 1950 to the first quarter 1951. This makes for a more "realistic" base period, the agency has decided.

The new actions are dictated partly because of a current shrinking of the copper import rate. Based on the import figures for the first 2 months of 1951, the NPA now fears that the total copper from abroad may be less than 500,000 tons.

On the basis of current production rates, however, the agency expects 1951 domestic production to equal that of 1950.

In the meantime, the Brass Mill Industry Advisory Committee is recommending that NPA should allocate copper to its mills on a historical basis, continuing the use of percentage minimums for defense-rated orders, rather than the CMP plan of setting aside an amount to meet DO-orders with the rest left to nonrated orders.

### Stop Stockpiling

The committee has also recommended the stopping of stockpiling of copper by the government and to have the armed services release to industry an estimated 100,000,000 lb of brass scrap now thought to be in their possession.

Dwindling supplies of domestic copper scrap has hit refinery production and is now hitting brass mills and foundries, the NPA says. It explains further that zinc supplies are equally as tight as copper and the agency does not expect to know what the actual balance may be until after requirements are settled under CMP.

## OPS Eases Some Price Rules

**Washington**—OPS has amended CPR 22 to ease price-calculating requirements. Sellers unable to price products under the general freeze orders of Jan. 26 except by application to OPS, and who must apply again under CPR 22, need not duplicate information already given.

Prices established for such sellers by OPS will stand until sellers are notified they have been changed. The agency eased a requirement that manufacturers give OPS 15 days' notice before selling a new product. No report is required where sales of a new commodity are not expected to exceed $10,000.

CPR 22 exempts cast, rolled, drawn or extruded metals or alloys, and fabricated structural steel plate and fabricated reinforcing bars. Revised regulation now covers cast iron soil pipe and fittings, cast iron water and gas pipes and fittings, valves and pipe fittings, metal lath and metal lath accessories.

## Industry Controls This Week:

**NPA Orders**

M-1, Set-asides—Raises July set-asides for iron and steel products and shortens lead time. (See story p. 107.)

M-4, Construction—Amends order to assure building supplies for defense and defense supporting projects. Effective May 11, 1951.

M-11, Copper amendment—Requires brass mills to accept rated orders at minimum percentages. (See story this page.)

NPA REG. 4, MRO limitations—Adjusts limits on use of DO-97 for purchase of materials under the MRO program. Rating may be applied to obtain up to 120 pct MRO materials.

**OPS Orders**

CPR-9, U. S. territories—Amendment 2 tightens price regulations for home made products sold in territories and possessions. Effective May 21, 1951.

CPR-22, Figuring prices — Order amended to ease price-calculating requirements in some cases.

CPR-30, Military goods—Exempts strictly war goods from price control. Effective May 28, 1951.

CPR-36, Used steel drums—Rolls back prices for used drums and for reconditioning. Effective May 16 1951.

## No Price Control for War Goods

**Washington** — Machinery and related products of a "strictly military nature" will be exempt from price control.

OPS ruled this week the exemption will become effective on May 28, effective date of regulation CPR 30 which rolls back all

machinery prices to pre-Korea levels.

Items of dual military and civilian use will be subject to CPR 30.

## Place Hand Tool Orders Normally

**Washington**—Manufacturers of agricultural hand tools have been advised by NPA to go ahead and place orders for third quarter deliveries of materials on a normal basis.

These orders will be validated after July 1 with steel, copper and aluminum allocations under the CMP. The go-ahead was given by NPA after representatives of the industry had reported that third quarter output would drop sharply unless such assurance was given.

## Assign Tinplate for Export

**Washington**—A quota of 1150 long tons of pig tin for production of export tinplate has been set for the third quarter of 1951 by the Office of International Trade. It is an increase of 150 long tons over the second quarter quota. All the tinplate will go for food packing. The 1150 tons of pig will produce about 124,960 short tons of export tinplate.

## Water Carriers Seek Price Relief

**Washington**—Inland and intercoastal water carriers are asking OPS to issue a price regulation validating contracts made by carriers. Many carriers claim they will sustain serious losses if forced to continue operating under the General Ceiling Price Regulation.

## Converters Get 90 Pct of Base

**Washington** — Order M-1 was amended this week to provide steel converters with sufficient supplies to give them a minimum of 90 pct a month of their base-period average. Excluded from the 90 pct floor is carbon plate for line pipe, large quantities of which are scheduled for defense use. The amendment also changes the 45-day lead time on July shipments of carbon steel to 30 days.

## DEFENSE CONTRACTS

Week of May 21, 1951

**Generator**—Homelite Corp., Port Chester, N. Y.
**Radiosonde**—Johnson Service Co., Milwaukee
**Air turbine starters**—Garrett Corp., Los Angeles
**Pyrometers, thermocouples**—The Bristol Co., Waterbury, Conn.
**Gears**—Bendix Aviation Corp., Pacific Div., North Hollywood, Calif.
**Bearings**—Lucian Q. Moffitt, Inc., Akron
**Milling machines**—Kearney & Treacker Corp., Milwaukee
**Parts**—International Harvester Co., Washington
**Refrigerators** — International Harvester Co., Washington
**Gages** — Wiancko Engineering Co., Altadena, Calif.
**Lathes**—Machinery Associates, Inc., Philadelphia
**Compressor**—Davey Compressor Co., Kent, Ohio
**Compressor**—Le Roi Co., Milwaukee
**Compressor** — Worthington Pump & Mach'y Corp., Los Angeles
**Jacks**—Gilfillan Bros., Inc., Los Angeles
**Fuel tanks**—Century Engineers, Ltd., Burbank, Calif.
**Machinery** — Minneapolis-Honeywell Regulator Co., Minneapolis
**Inverters, generators**—Holtzer Cabot, Inc., Boston
**Generators**—Sunbeam Corp., Chicago
**Indicators** — Bendix Aviation Corp., Bendix Radio Div., Baltimore
**Aircraft spare parts**—Bendix Aviation Corp., Teterboro, N. J.
**Tractor spare parts**—Rio Motors, Inc., Lansing, Mich.
**Transmitter**—Bendix Aviation Corp., Teterboro, N. J.
**Engine parts**—Allison Div., GMC, Indianapolis
**Aircraft parts**—Sikorsky Aircraft Div., Bridgeport, Conn.
**Aircraft parts**—Republic Aviation, Farmingdale, N. Y.
**Assemblies**—Aeronca Mfg. Corp., Middletown, Ohio
**Survival kits**—Cappel MacDonald Co., Dayton, Ohio
**Machinery**—Kaiser-Frazer Corp., Willow Run, Mich.
**Trainers**—Link Aviation, Inc., Binghamton, N. Y.
**Indicators**—Bendix Aviation Corp., Teterboro, N. J.
**Blowers, parts**—Buckeye Air Compressor Co., Dayton, Ohio
**Radio receivers** — Collins Radio Co., Cedar Rapids, Iowa
**Radio set**—RCA, Camden, N. J.
**Engine parts**—Fisher Engineering, Inc., Huntington, Ind.
**Aircraft assy.**—North American Aviation, Inc., Los Angeles
**Generator parts**—General Electric Co., Schenectady
**Power plant parts**—Fairchild Engine & Airplane Corp., Farmingdale, N. Y.
**Trucks**—Jakes Foundry Co., Nashville, Tenn.
**Swaging machines**—James R. Kearney Corp., St. Louis
**Lathes**—Machinery Associates, Inc., Phila.
**Threading machines** — Landis Machine Co., Waynesboro, Pa.
**Milling machines**—Brown & Sharpe Mfg. Co., Providence
**Analyzer**—Weston Electrical Instruments Corp., Newark, N. J.
**Generator sets**—Fairbanks Morse Co., Chicago
**Compressor, air**—Ingersoll-Rand Corp., Philadelphia

# CONTROLS DIGEST and Subcontracting News

## Small Business Gets a Bit

**Washington**—Two-thirds of all Navy prime contracts are going to small business, a Navy official has told the Senate and House Small Business Committees. Over 330,000 prime contracts totaling $649 million went to the small firms from July 1, 1950, through Mar. 31, 1951. Dollarwise the contracts accounted for 18.1 pct of Navy spending.

## Booklet for Small Businessman

**Washington** — *Mobilization Guide for Small Business*, a 31-page booklet to help the small businessman, has been prepared by the Defense Production Administration. Priorities, explanation of government control orders, how to go about getting defense contracts, and what to do if your plant is threatened with closure for lack of materials are discussed. The booklet can be obtained free from your nearest field office of the Dept. of Commerce.

## Award Bell Aircraft Contract

**Fort Worth, Tex.**—Wigton-Abbot Corp., Plainfield, N. J., and Tellepsen Construction Co., Inc., Houston, have been awarded a Bell Aircraft Corp. contract for construction of a $3 million helicopter engineering and manufacturing plant near this city.

## Tank, Track Awards Made

**New York**—Contracts for self-sealing fuel tanks and rubber tracks for Army vehicles, totaling $30 million, have been awarded to the mechanical goods division of United States Rubber Co.



## Machine Time Filled?

**THE IRON AGE offers a special service to prime contractors who want acceptable bidders on subcontract work. This service is offered free in an effort to bring prime contractors and subcontractors together. Send a picture or simple inked sketch of the part to be subcontracted, with the part number, approximate size, tolerances, material, machine work needed and quantity required to:**

**"Can You Make It?" Editor**
**The Iron Age**
**100 East 42nd Street**
**New York 17, N. Y.**

## Boston Clinic Well Attended

**Boston**—Some 5000 small businessmen crowded into the Armed Services Procurement Clinic at Commonwealth Armory here last week to make their bid for a share of defense business. Many prime contractors, there were 77 of them, signed contracts on the spot.

Manufacturers and service representatives feel the clinic enabled them to complete preliminary work which ordinarily would take from 2 to 3 months.

## P&WA Uses 5285 Subcontractors

**East Hartford, Conn.**—Pratt & Whitney Aircraft, a division of United Aircraft Corp., will spend $250 million this year among subcontractors and suppliers. Ninety pct of the 5285 firms are classed as small businesses and represent 34 states. More than half the firms are located outside the New England area.

## Temco to Overhaul Thunderbolts

**Dallas, Tex.** — A contract to overhaul a "substantial quantity" of F-47 Thunderbolt fighters has been awarded to Texas Engineering & Mfg. Co., Inc., this city, by the Air Force. All work will be done at the main Temco plant near Hensley Field.

*Continued*

## GSA Wants Fire Equipment

**Washington** — General Services Administration is in the market for 10 fire trucks, 30,000 ft of fire hose, and an amount of spare parts equal to 10 pct of equipment cost. These will be bought for shipment to Indo-China.

## NPA in the Dark on Full CMP Needs for 1951, Johnson States

**Detroit** — NPA does not yet know how much steel will be needed for 1951 defense requirement. CMP will take more than a third of available steel, aluminum and copper at the start, Courtney Johnson, director of NPA's Motor Vehicle Div. said this week.

Mr. Johnson, on leave from Studebaker Corp., said truck makers will probably receive DO ratings on non-military vehicles. NPA may also pass an order to bring steel tonnages required for replacement parts under CMP.

Companies lacking CMP assistance were urged to prepare bills of materials for products they intend to make. Schedules showing steel, copper and aluminum requirements, with specific delivery dates, must be furnished in applying for CMP ratings.

CMP restrictions will be applied gradually, the speaker said. Cutting inventories to minimum working levels might temporarily free some materials in tight supply.

## Steel Away from Freight Cars?

**Washington** — NPA admitted that it means to channel away large steel tonnages formerly going to freight cars and other special projects. More than a score of Senators oppose this. NPA said these programs have been taking as much as 500,000 tons monthly.

Chairman Johnson, D., Colo., of the Senate Commerce Committee, said he believed it meant reducing freight car steel from 310,000 tons to about 224,000 tons a month—or a drop of from 10,000 cars a month to 7500.

## Make Selling a Science For Future Market, Says David Austin

**Philadelphia** — Higher fixed costs resulting from a heavier burden of fringe benefits to labor and a greatly expanded productivity give industry a narrower lane to economic success. To cope with the post emergency market, management must knuckle down to selling as a science and "mass produce customers," said David F. Austin, executive vice-president of U. S. Steel Co.

He delivered the Charles C. Parlin Memorial Lecture before the Philadelphia Chapter, American Marketing Assn., last week and received the 1951 Parlin Memorial Award for outstanding contribution to marketing.

"We will need to plan sales by product, by grade, and by size, by area, and by customer," stated Mr. Austin. "Such plans do not exist today in any degree remotely approximating our probable needs." He urged management to make full use of marketing research.

## Case of Vanishing Applications

**Washington** — An NPA official charged this week that General Motors Corp. applications for locomotive steel priorities were approved while those of its competitors twice became "lost."

William G. Knight, the NPA official, said five locomotive building groups started applications for steel priorities through the agency in December. Applications from American Locomotive, Fairbanks-Morse, General Electric, and a combination of Baldwin and Lima-Hamilton disappeared twice, while GM received a guaranteed allocation of 2663 tons, Mr. Knight said.

## Revise Metals Stock List

**Hawthorne, Calif.**—The metals stock list for East and West aircraft manufacturers and distributors has been revised for 1951. It is the joint effort of warehouses, mills, and aircraft manufacturers to list the most-used aircraft materials, choosing specification, hardness, finish and size.

## Tax Write-Off OK's to Date Total 1209; Pass $5 Billion Mark

Washington—Fast tax write-off authorizations through May 11 total 1209, according to the Defense Production Administration. Amount eligible for depreciation is $5,393,977,144.

Emphasis of authorization is shifting from basic production to processing, DPA points out. On Jan. 30, 3 months after the program started, authorizations for iron and steel expansion accounted for 83 pct of total. By Apr. 13 this figure dropped to 40 pct. Similar declines are noted in other basic industries.

Authorizations of interest to the metalworking industry, for the period Apr. 27 through May 11, follow. They include company use, amount applied for, amount authorized, pct certified:

Plastic Wire and Cable Corp., wire, $125,000, $125,000, 75.

Dow Chemical Co., magnesium chloride, $1,422,000, $1,422,000, 85.

Metallurgical Laboratories, research, $1,600,000, $1,600,000, 75.

Shell Oil Co., benzene, $10,400,000, $10,400,000, 85.

Pure Oil Co., butenes, $11,140,000, $11,140,000, 75.

Shell Oil Co., pipeline, $274,000, $274,000, 75.

Delaware, Lackawanna & Western RR. Co., transportation, $2,825,275, $2,825,275, 80; $1,923,556, $1,923,556, 80.

Baltimore and Ohio RR. Co., transportation, $7,861,750, $7,861,750, 80.

Aerojet Engineering Corp., ordnance, $2,275,965, $2,065,465, 75.

Great Lakes Steamship Co., Inc., transportation, $6,000,000, $6,000,000, 80.

Texas Natural Gasoline Corp., transportation, $435,000, $435,000, 80.

New York Central RR. Co., transportation, $5,261,000, $5,261,000, 80; $4,660,000, $4,660,000, 80; $2,772,060, $2,772,060, 80; $5,450,000, $5,450,000 80; $3,065,000, $3,065,000, 80; $2,625,000, $2,625,000, 80.

Seabord Shipping Corp., water transportation, $254,819, $254,819, 80.

Baltimore and Ohio RR. Co., transportation, $5,390,611, $4,505,865, 65.

Delaware, Lackawanna & Western RR. Co., transportation, $5,428,380, $5,428,380, 65.

Harshaw Chemical Co., chrome alumina, $149,082, $78,600, 70.

Air Reduction Co., Inc., calcium carbide, $8,329,000, $4,491,000, 60.

Minnesota Mining & Mfg. Co., trifluoreoestic acid, $471,000, $471,000, 85.

Jones & Laughlin Steel Corp., commercial fertilizers, $70,000, $69,400, 85.

Monsanto Chemical Co., copper & quinolinolate, $41,250, $21,250, 70.

Dow Chemical Co., pipeline, $1,061,000, $1,061,000, 60.

Air Reduction Co., acetylene, $103,416, $103,416, 60.

Chesapeake & Ohio RR. Co., transportation, $23,757,704, $17,133,436, 65.

Collins Radio Co., radio units, $842,382, $777,382, 80.

New York Central RR. Co., transportation, $4,415,000, $4,415,000, 80.

Aluminum Co. of America, aluminum, $2,359,000, $2,359,000, 95.

Carolina Aluminum Co., aluminum, $295,000, $295,000, 95.

New York Central RR. Co., transportation, $1,866,593, $1,866,593, 65; $2,307,832, $2,307,832, 65; $383,650, $383,650, 65; $2,257,132, $2,257,132, 65.

Aluminum Co. of America, aluminum, $34,000,000, $34,000,000, 80.

Standard Oil Co. of Texas, fuels, $10,264,000, $10,264,000, 80.

## • News of Industry •

Electric Steel Castings Co., steel castings, $9,083, $9,083, 75.
Wagner Malleable Iron Co., iron castings, $300,000, $300,000, 75.
Western Alloyed Steel Casting Co., steel castings, $7,905, $7,905, 75.
Nat'l Malleable & Steel Castings Co., iron castings, $3,547,875, $3,547,875, 75; $544,000, $544,000, 75; $921,000, $921,000, 75; $1,128,000, $1,118,500, 75.
Standard Steel Spring Co., springs, universal joints, $175,000, $175,000, 75.
Nat'l Malleable & Steel Castings Co., steel castings, $158,000, $158,000, 75.
Harrison Steel Castings Co., steel castings, $658,476, $658,476, 75.
Electrical Engineering & Mfg. Corp., electrical motors, $196,500, $144,500,* 75.
Detroit Aluminum & Brass Corp., bearings, $1,081,413, $1,071,413, 75.
Evans Tool & Die Co., machining castings, $59,243, $59,243, 85.
Pittsburgh Coke & Chemical Co., coke, $6,115,000, $6,115,000, 85.
Baltimore & Ohio RR. Co., transportation, $1,732,560, $1,732,560, 65.
Macon, Dublin & Savannah RR. Co., transportation, $117,497, $113,497, 65.
Baltimore and Ohio RR. Co., transportation, $781,280, $781,280, 65.
Climax Uranium Co., mineral ores, $173,699, $173,699, 90.
Continental Can Co., Inc., drum liner board, $7,350,846, $7,350,846, 50.
Servel, Inc., airplane parts, $1,231,000, $1,231,000, 75.
National-Standard Co., cold rolled strip, $786,000, $786,000, 60.
Sylvania Electric Products, Inc., electron tubes, $427,533, $427,533, 80.
Titanium Metals Corp. of America, titanium, $14,162,840, $14,162,840, 90.
Johnson Bronze Co., bearings, $614,833, $592,403, 75; $785,118, $785,118, 75.
Trane Co., heat transfer surface, $671,800, $671,800, 75.
Alabama Great Southern RR. Co., transportation, $9,200,000, $8,814,000, 65.
Flint Belt RR. Co., transportation, $92,320, $92,320, 65.
Chesapeake and Ohio RR. Co., transportation, $2,383,763, $2,383,763, 65.
Douglas Tool Co., ordnance, aircraft component, $68,000, $60,000, 75.
Wickes Engr. & Constr. Co., electronic equipment, $230,977, $230,977, 75.
Vulcan Mold & Iron Co., ingot-molds, accessories, $1,022,800, $1,022,800, 75.
Delaware & Hudson RR. Corp., transportation, $18,606,197; $12,925,000, 80; $5,681,197, 65.
Cleveland-Cliffs Steamship Co., transportation, $900,000, $900,000, 80; $900,000, $900,000, 80.
Penn Engineering & Mfg. Corp., fasteners, $22,458, $22,458, 85.
Hudson Wire Co., insulated magnet wire, $368,700, $368,700, 80.
Casting Engineers, Inc., precision castings, $153,815, $143,815, 85.
Highway Trailer Co., trailers, $80,000, $80,000, 75.
Transicoil Corp., motors, generators, $12,850, $12,850, 90.
Carroll Pressed Metal Co., metal stampings, $4,975, $4,618, 90.
Sloss-Sheffield Steel & Iron Co., coke, $1,976,200, $1,976,200, 85.
Wells Aircraft Co., aircraft parts, $95,000, $95,000, 90.
Advance Electric & Relay Co., relays, $87,010, $87,010, 75.
Morrison Steel Products, Inc., stowage boxes, $1,720,007, $1,720,007, 80.
Zallea Brothers, piping, $34,048, $30,616, 75.
Liberty Products Corp., aircraft parts, $186,070, $186,070, 90.
Monongahela Connecting RR. Co., transportation, $1,166,700, $1,066,700, 65; $1,784,889, $1,523,500, 65.
Electric Specialty Co., armature laminations, $15,683, $15,683, 90.
Townsend Co., self-locking nuts, $106,500, $106,500, 75.
Allen-Bradley Co., potentiometers, $632,000, $632,000, 75.
Standard Pressed Steel Co., set screws, $6,798,067, $6,697,540, 75.
Hartford Tool & Die Co., Inc., aircraft engines parts, $30,526, $30,526, 90.
American Gystoscope Makers, Inc., optical instruments, $65,653, $65,653, 75.
Kaiser Aluminum & Chemical Corp., stretcher aluminum plate, $350,000, $350,000, 75.
Bethlehem Steel Co., sulfuric acid, $4,000,000, $4,000,000, 70.
Gessna Aircraft Co., aircraft components, $947,186, $940,536, 80.
Rome Cable Corp., cable, $915,526, $779,100, 75.
Woodward Iron Co., coke, $2,820,000, $2,820,000, 85.

Cleveland Twist Drill Co., cutting tools, $4,251,357, $4,063,357, 75.
Cuyahoga Valley Ry. Co., transportation, $424,000; $320,000, 65; $4,000, 50.
Godin Tool & Die Co., tools-jigs, $257,300, $257,300, 80.
Bridgwater Machine Co., airplane parts, $56,051, $56,051, 85.
B. F. Goodrich Co., airplane parts, $107,285, $107,285, 90.
Greenfield Tap & Die Corp., cutting tools, $1,782,900, $1,717,291, 75.
Alamo Water Transportation Co., transportation, $223,600, $223,600, 80.
Seaboard Air Line RR. Co., transportation, $906,685, $702,333, 65.
Tank Barge, Inc., transportation, $239,501, $239,501, 80.
United States Rubber Co., communications wire, $111,338, $108,864, 75.
Druge Brothers Mfg. Co., ordnance parts, $119,375, $119,375, 90.
Beckman & Whitley, Inc., ordnance components, $15,866, $15,866, 90.
Great Lakes Towing Co., towing service, $2,000,444, $2,000,444, 70.
Globe Hoist Co., fittings, bushings, $61,485, $61,485, 90.
New York Central RR. Co., transportation, $6,735,000, $6,735,000, 65; $2,109,450, $2,109,450, 65; $904,392, $904,392, 65; $620,528, $620,528, 65.
Ehrhardt Tool & Machine Co., precision tools, $52,532, $52,532, 90.
Coleman Co., Inc., airplane parts, $347,135, $347,135, 80.
Roots-Connersville Blower Corp., compressors, $1,037,887, $1,030,324, 80.
Texas and Pacific RR. Co., transportation, $5,018,539, $5,018,539, 80.
Kingwell Brothers, Ltd., bushings, $62,016, $62,016, 90.
Winslow Mfg. Co., jigs, fixtures, $26,001, $26,001, 90.
Westinghouse Electric Corp., ordnance, $11,515,000, $11,475,000, 75.
Carpenter Steel Co., steel, $7,152,000, $7,152,000, 60.
R. G. LeTourneau, Inc., steel plates, $4,550,000, $4,550,000, 70.

*Amount to be reduced by current value or sale price of old building being replaced.

## NLRB Rules on Dues-Job Fight

**Washington** — Employees who lose union membership because of failure to pay dues on time may be fired under valid union-shop contracts, NLRB ruled this week.

The board ruled the Taft-Hartley act does not protect workers who offer to pay delinquent dues before being dropped by unions.

NLRB also ruled an employer's belief that a union is communist-led does not justify the employer in actively assisting another union's organizing efforts.

## Tennessee Steel Mill Gets OK

**Oneida, Tenn.** — The National Production Authority has reportedly approved an application of Tennessee Steel Corp., of Oneida, to construct a steel mill, first in Tennessee.

The plant will be located in Scott County, midway between the Wolf Creek and Norris Dams of the Tennessee Valley Authority.

## STEEL CONSTRUCTION NEWS

**Fabricated steel awards this week included the following:**

**600 Tons,** Philadelphia, boiler house for National Union Radio Corp., Cantley & Co., same city, general contractors.

**200 Tons,** New Orleans, La., bridge on Canal Boulevard over railroad tracks for New Orleans Terminal Co., to Virginia Bridge Co., Birmingham.

**180 Tons,** Maywood, Ill., Cook County grade separation at 9th Ave., to American Bridge Co.

**180 Tons,** Maywood, Ill., Cook County grade separation at 17th Ave., to American Bridge Co.

**Fabricated steel inquiries this week included the following:**

**600 Tons,** Pottstown, Pa., building extension for Firestone Plastics Co., bids due May 28.

**500 Tons,** Philadelphia, Catapult construction for Navy Yard, pending.

**Reinforcing bar awards this week included the following:**

**500 Tons,** Union County, N. J., State Dept. of Highways, State Route 4 Parkway, Sect. 8-B, Poirier & McLean Corp., New York City, general contractors.

**350 Tons,** Boston, Mass., Embankment Road connection, deck electrical work and snow melting system for single double deck elevated highway structure. F. D. Sabin, Cambridge, district engineer. June 30, 1953 is completion date. V. Barletta Co., Roslindale is low bidder.

**300 Tons,** Atlantic City, N. J., Seashore Children's Home, Anthony P. Miller, Inc., same city, general contractor.

**200 Tons,** Eddystone, Pa., General Steel Castings Co., Erwin & Leighton, Philadelphia, general contractors, to Bethlehem Steel Co., Bethlehem.

**170 Tons,** Philadelphia, laundry building for Philadelphia State Hospital, L. F. Driscoll Co., same city, general contractors.

**100 Tons,** Allentown, Pa., administration building for Allentown State Hospital, H. A. Williams, same city, general contractor.

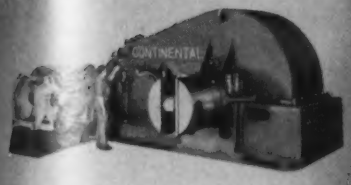
**Reinforcing bar inquiries this week included the following:**

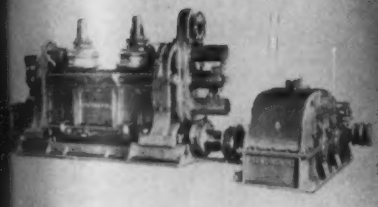
**800 Tons,** Boston, Mass., construction of substructure and approaches for Charlestown connection of the Boston Central Artery. Fred D. Sabin, Cambridge, Mass., district engineer.

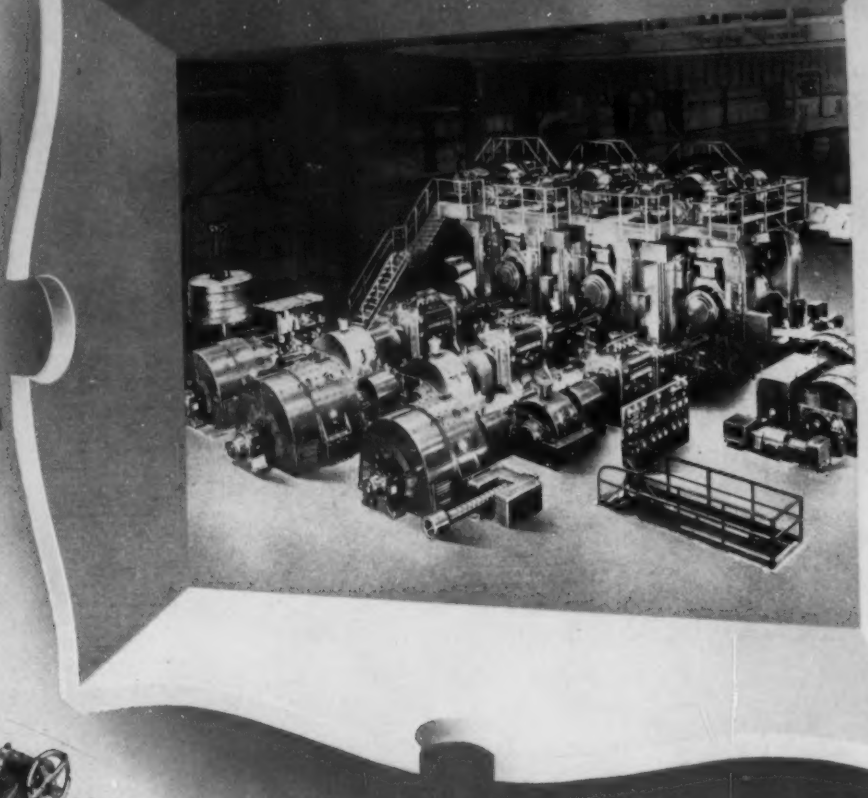
## Republic Asks U.S. Approval To Get Control of Cargo Ship Firm

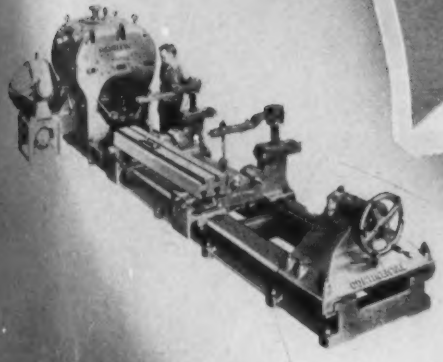
**Cleveland**—Republic Steel Corp. wants a firmer footing in the Lake vessel business. Last week it asked Interstate Commerce Commission to stamp approval on plans to acquire controlling interest in Nicholson - Universal Steamship Co., Detroit.

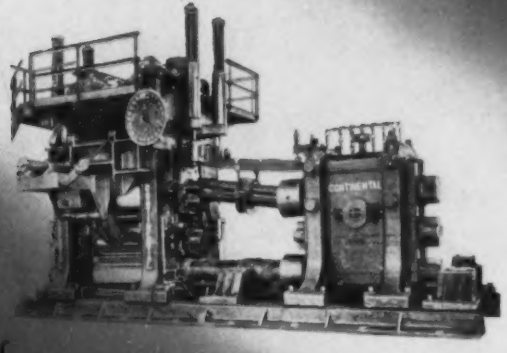
Having purchased 50 pct of the firm from T. H. Browning Steamship Co., of Detroit, Republic wants to buy another 20 pct. Nicholson-Universal recently purchased three World War II C-4 ocean cargo ships from the U. S. Maritime Commission.







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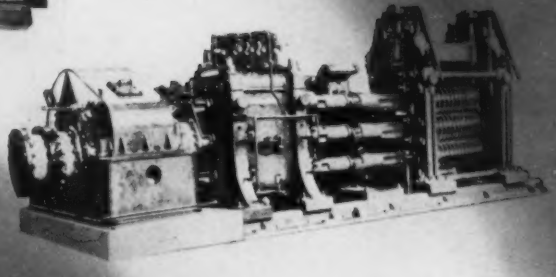

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- *For welding nickel-alloy steels;* gives high impact resistance at low temperatures . . . 75LP.
- *For Chrome-moly steels* (1% Cr., ½% Mo.) used in power piping . . . 80LE.
- *For Chrome-moly steels* (2% Cr., 1% Mo.) used in power piping . . . 90LE.
- *To match heat-treating properties of SAE 1040* and like steels. Also for steel-castings repair . . . P&H .40C.
- *For welding high hardenable steels.* Also steel castings repair . . . AW2B.
- *For repair welding Grade C castings* and steels of similar composition . . . P&H-7.
- *Comparable to SAE 8630 steel* . . . excellent heat-treating and flame-hardening characteristics . . . 90LH-2.
- *For welding high hardenable steels* without pre-heat such as re-rolled rail stock . . . P&H-12 and P&H-17.
- *For aircraft and similar steels* . . . has wide range of properties under heat treatments . . . P&H-21.

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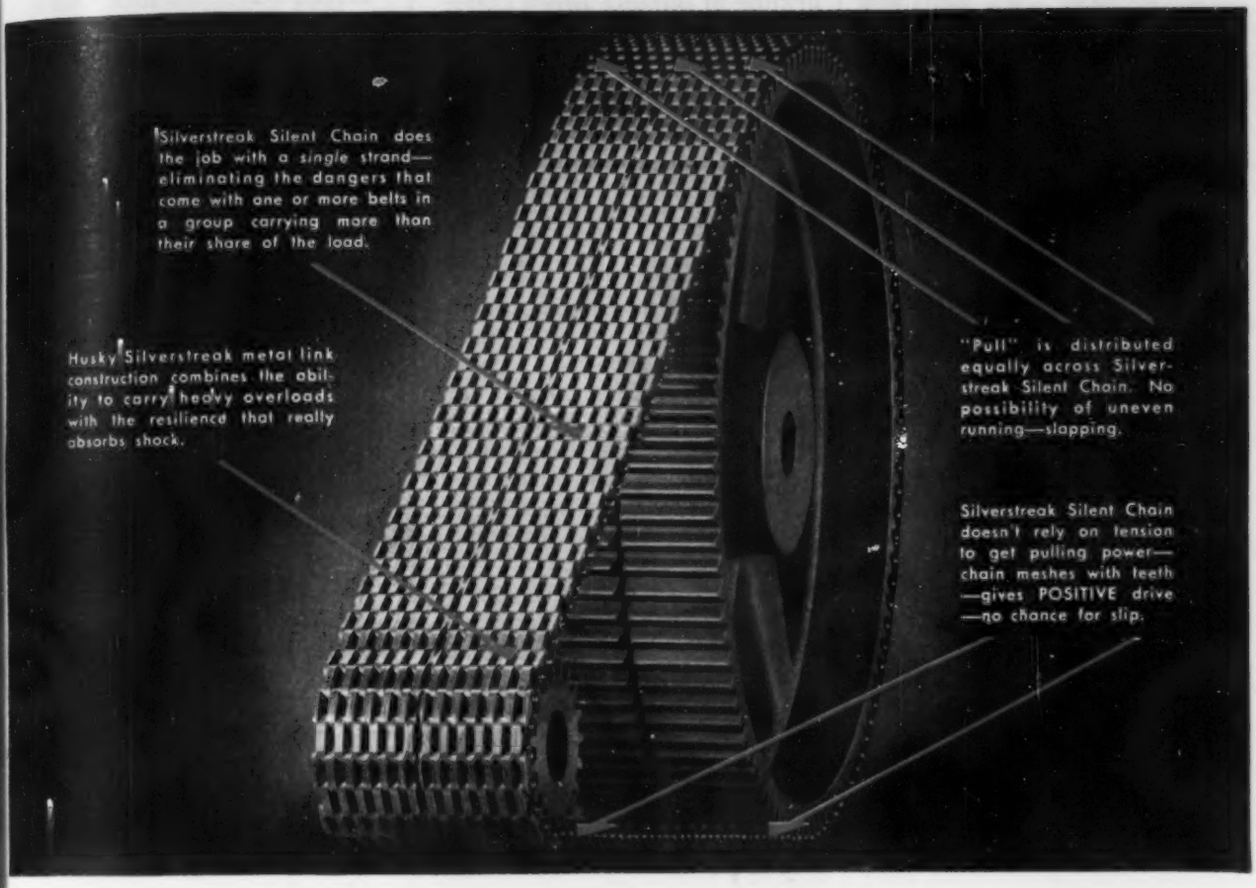


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TAKE the proven road to increased production — through the best in high-speed power transmission. You'll find Link-Belt Silverstreak Silent Chain Drives are 98.2% efficient. With normal maintenance, you have a *positive* drive that runs for years and years.

And note this important point — on extremely short centers Silverstreaks lose none of their efficiency. What's more, reduction ratios as high as 10-to-1 are frequently used. Both of these Silverstreak features save you valuable space.

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## Republic's Hamaker Predicts Decline of Durable Goods Later

Pittsburgh—L. S. Hamaker, assistant general manager of sales, Republic Steel Corp., predicted at the 41st spring meeting of the National Assn. of Sheet Metal Distributors that production of durable goods will fade rapidly in the fourth quarter. The reason: lack of steel.

Concerning reports of heavy inventories of durable goods due to public buying apathy, Hamaker asserted that the company which could weather the storm in the months immediately ahead will be happy to have those same inventories next fall and winter.

Hamaker was critical of reports from Washington concerning the percentage of steel going into defense and defense-supporting activities. These percentages are leading to false optimism on the part of some consumers, he said.

### Truth of the Matter

The real story, he said, is in the percentage of products for these purposes, and pointed out that in Republic the story is this: Since Mar. 1 more than 52 pct of its tonnage is controlled. Only 31 pct of carbon bars is still "free", and only 20 pct of alloy bars. The story on sheets is 50-50. Wire, merchant pipe, and tinplate are scarcely affected.

Frank Juraschek, Commercial Research Dept., U. S. Steel Co., said that more than 50 pct of his company's production is controlled. He compared steel production in June 1950 with that of April 1951, and pointed out that while the increase in the Federal Reserve Board's index of industrial production and that of steel production is about the same, more than 1 million finished tons of steel per month are now going into vital channels.

This figure will increase in the months ahead. Such products as plates, structurals, and bars, he said, are controlled up to 96-98 pct. Industry-wide, about 48 pct of sheet tonnage is controlled, he added.

## GM's Total Vehicle Sales Match First Quarter Last Year

Detroit—The main part of General Motors Corp. defense production is still in the make-ready stage. First quarter sales and work performed under defense engineering, research and development contracts amounted to $100 million, C. E. Wilson, president, and Alfred P. Sloan, Jr., board chairman, told stockholders.

Sales of cars in the first quarter of 1951 were 670,245, trucks and coaches, 154,365, for a total of 824,610. In the first quarter of '50, 686,229 cars, and 143,798 trucks and coaches were sold. Total was 830,027.

Defense goods deliveries increased and defense staffs of operating divisions were making ready for war production. This make-ready phase is a time-consuming part of mass production effort, GM officials said.

The weight of material cuts would be felt by passenger car production more heavily in the second quarter, said the report. GM net income in the first quarter was $141 million on net sales of $1,960 million. In the comparable quarter last year, net income was $212 million on net sales of $1,643 million.

## Oilmen May Order for Export

Washington — Permission has been granted by NPA to 41 petroleum operators to order export oil country goods for July delivery. The material will be used in drilling wells in 20 foreign countries.

Tonnages for July shipment will be charged against the 40,000 ton allocation for third quarter export. The foreign program calls for sufficient goods to drill 2400 wells.

## Hooker Opens New PA Office

Niagara Falls, N. Y.—A new purchasing office has been opened at the corner of Buffalo Ave. and Iroquois St., this city, by the Hooker Electrochemical Co., reports H. W. Hooker, Jr., purchasing agent. Mail address is unchanged.

## Order Two Billet Mills And Blooming Mill for Fairless Works

**Pittsburgh** — United Engineering and Foundry Co. will install a 30-in. six-stand continuous vertical and horizontal billet mill and a 21-in. four-stand continuous vertical and horizontal billet mill in U. S. Steel Co.'s Fairless Works. The mills are to be completed in 1952.

Both mills will produce billets, rounds, and slabs. Estimated capacity is about 3000 tons per 8-hr turn. Continental Foundry & Machine Co. is now building a high speed, fast reversing 40-in. blooming mill for the Fairless Works. Primarily an intermediate blooming mill, it will roll partially reduced ingots to blooms for the billet mill. New design developments will enable the mill to produce more rolled tonnage at higher finishing temperatures for later rolling operations.

## White to Buy Out Sterling

**Cleveland** — White Motor Co. has arranged to purchase substantially all the assets of Sterling Motor Truck Co. of Milwaukee, according to a joint statement by Robert F. Black, White Motor Co. president and William G. Sternberg, Sterling president.

Approval of 70 pct of the Sterling stock is required to complete the transaction. Sterling shareholders voted on May 21. White Motor Co. intends to continue operations at the Sterling plant. The purchase will extend White's line of trucks in the heavy duty, special-purpose truck markets.

## Rebuilt Ore Boat on 1st Trip

**Chicago**—The *Philip D. Block*, Inland Steel Co. ore boat lengthened this winter by addition of a 72-ft mid-section, made its first trip to the ore loading docks at Superior, Wis., recently.

The added section brought the ship's total length to 672 ft and increased its capacity to 14,000 gross tons. The vessel can now carry 468,000 tons in a normal season against 422,000 last year.

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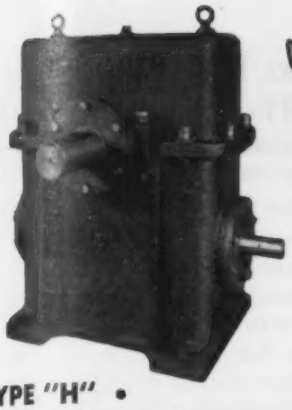

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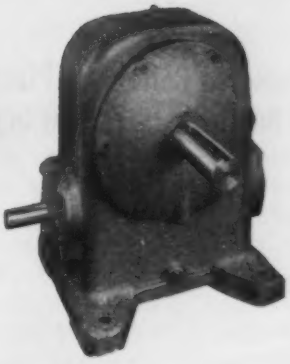

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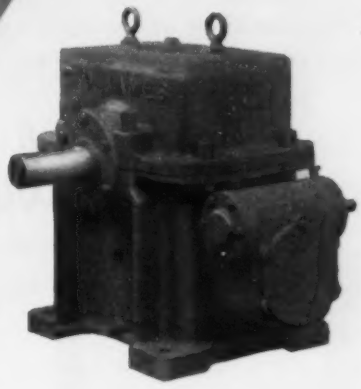

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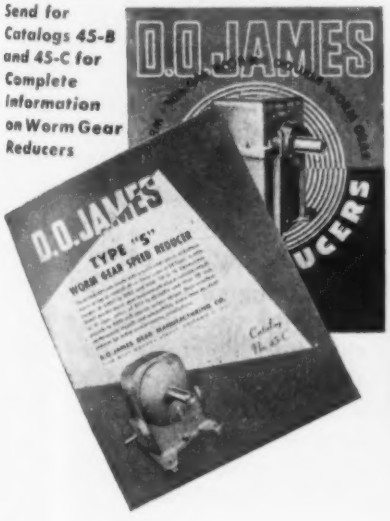


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## Downington Refractory Plant Will Duplicate H-W Plant in Ohio

**Pittsburgh** — The $3.5 million silica plant to be built by Harbison-Walker Refractories Co. at Downington, near Philadelphia, will be a duplicate of the Windham, Ohio, plant scheduled for completion by the end of this year.

E. A. Garber, president, also disclosed that the company's new clay brick unit at Bessemer, Ala., will be in operation by July, doubling capacity. A new tunnel kiln already in operation has increased production at the Fulton, Mo., works by 25 pct.

### Other Expansion

Other results of the company's expansion program includes doubling of potential capacity of the magnesite plant at Cape May, N. J., by July; doubling of production at Fairfield, Ala., by the end of 1951; addition of one-third to capacity at East Chicago, Ind., and Baltimore, Md., work to be underway by the fourth quarter of '51.

The silica plant at Downington increases to $25.5 million H-W's planned outlay for expansion.

## American Welding Shipments Up

**Warren, Ohio** — First quarter shipments of American Welding & Mfg. Co. were twice the dollar volume of the same 1950 period, William J. Sampson, Jr., president, has reported. American Welding supplies a large part of the stainless steel, aluminum, titanium and alloy jet engine rings to American and Canadian manufacturers of jet engines.

## Standard May Make Avon Jet

**London** — Standard Motor Co. has been asked by the Ministry of Supply to consider making Rolls Royce Avon jet engines for the Royal Air Force. The Avon engine powers the English Canberra twin-jet bomber.



## France, Belgium May Salvage Steel from Ships in Normandy Area

**Washington** — France and Belgium may salvage steel from sunken ships in the Normandy area.

This is part of an overall plan of the Economic Cooperation Administration to boost scrap supplies for steel mills of Western Europe. Scrap drives are also being revived, particularly in England.

Both the British Isles and Italy have used up left-over wartime scrap. Some British mills have been forced to close. France is rapidly nearing the bottom of the barrel.

Basic reason for the scrap shortage is the recovery of steel production in Marshall Plan countries since the war. The production rate for last half 1950 was about 56 million tons — about a million above prewar levels.

## Philco Engineers at War

**Philadelphia**—Philco Corp. has an army of almost 2000 electronic engineers serving with the armed forces at garrisons and battlefields. The men are in the Philco Tech-Rep (technical representative) Div. and have won praises of officers and enlisted men all over the world. So high is the respect for them that "Patterson Hill" in Korea is named after a Philco engineer.

Philco says its "military" corps is broadly trained and can work on practically all types of military electronic and communications equipment. They assist Army, Navy, and Air Force personnel in "planning, evaluating, installing, operating and maintaining" their electronic devices.

## Germans Here to Learn

**Washington**—First German productivity team to be brought to the United States under Marshall Plan aid has arrived and is on a tour of industrial areas. It consists of 10 coal mining and processing experts who will study American methods.

## Brazil's Steel, Ore Output Establish New Production Records

**Steel output 420,188 metric tons in 1950 . . . U.S. best ore customer.**

Sao Paulo—Brazilian steelmaking and iron ore production are hitting new highs. Volta Redonda, the national steel mill, turned out 420,188 metric tons in 1950, top figure in its 5-year history. The mines of Companhia Vale do Rio Doce expect to produce 1.5 million metric tons of iron ore this year.

Volta Redonda's output was 36 pct over 1949 production. Pig iron production reached 339,062 metric tons in 1950, a 76 pct boost over the 1949 figure.

Cold-rolled sheet was the biggest item in finished steel goods—60,680 metric tons. Rails and accessories accounted for 57,535 metric tons.

Last year Brazil sent 900,172 metric tons of ore abroad. Biggest share went to the U. S. and Canada, with the U. S. taking 81.5 pct and Canada 10.5 pct. Dribbles of the high quality ore (average 68 pct iron) went to Holland, Germany, England, and Belgium.

Rio Doce iron ore export tonnage was 35,407 in 1942. This boomed to 471,910 tons in 1949. Foreign buyers have already contracted for 900,000 tons of 1951 production. Improvements on the railway from the rich Minas Gerais ore beds to the port of Vitoria have been a big factor in increased shipments.

## Ore, Not Coke, to Curb Output

**London**—Coke is not likely to be a production bottleneck for European pig iron goals of 59 million tons in 1953 but a shortage of from 5 to 10 million tons of iron ore may be the obstacle, reports the iron ore working group of the U. N. Economic Commission for Europe.

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## Jones & Laughlin Earnings

**Pittsburgh**—Net income of $8,255,000 is reported by Jones & Laughlin Corp. and subsidiaries for the first quarter. First quarter earnings for 1950 were $5,310,000.

# publications

*Continued from Page 37*

step conversion procedure is given. The catalog also presents the full line of lathe accessories and condensed data on standard lathes and drilling machines. *Cincinnati Lathe & Tool Co. Address requests to this column on company letterhead.*

## Degreasing handbook

A new 21-p. handbook on vapor degreasing of metal parts answers most questions generally asked about vapor degreasing; it completely covers the subject of what vapor degreasing is and to what types of materials and manufacturing this method can be applied. Numerous photographs show various types of units, and useful data charts are also included. *Phillips Mfg. Co.*

**For free copy insert No. 27 on postcard, p. 37.**

## Live centers

A technical data sheet describes the new line of Regent live centers, which have a small, free turning point and provide exceptional rigidity due to the stabilizing bearing located in the shank. The shorter overhang of the tool is shown to eliminate chatter, and accuracy of 0.0001 is guaranteed. The bulletin points out that these live centers have been designed exclusively for light duty and precision small parts production jobs. *Royal Products.*

**For free copy insert No. 28 on postcard, p. 37.**

## Pattern-draw units

A new 4-p. illustrated catalog describing the SPO series 500 jolt rock-over pattern-draw machines shows six models with capacities ranging from 200 to 1500 lb, table sizes from 12 x 16 in. to 32 x 40 in. and pattern draw from 6½ to 20 in. Design features presented include centralized controls, adjustable air-locked leveling bars, single valve to control both flask clamp and leveling device, automatically controlled valve to govern the entire rock-over operation and an adjustable two-speed draw. *SPO Inc.*

**For free copy insert No. 29 on postcard, p. 37.**

## Roof damage, repair

A new bulletin designed to aid in determining the exact condition of building roofs and in planning repairs contains illustrations of virtually every type of roof damage. It explains how and why roofs deteriorate and indicates trouble spots where the first danger signs appear. Patching and leak-stopping methods are described in detail, as are means of resurfacing and renewing old roofs. *Monroe Co., Inc.*

**For free copy insert No. 30 on postcard, p. 37.**

## Measurements lab

A 16-p. brochure describes the varied facilities of, and the work conducted in, the new $2 million Measurements Laboratory of the G.E. Meter and Instrument Div. The booklet shows pictorially how the laboratory's corps of specialists conducts research into new ways to measure; develops new materials and devices; tests them for reliability and accuracy; evaluates manufacturing processes; maintains accuracy standards, and checks products off the production lines. *General Electric Co.*

**For free copy insert No. 31 on postcard, p. 37.**

## Plug-in panelboard

Features of the Flexunit plug-in distribution panelboard are detailed in a new 4-p. bulletin listing sizes, capacities and prices of the four standardized surface cabinets in three sizes of mains (200, 400 and 600 amp) providing a broad range of combinations. Steps in assembling a plug-in distribution panelboard are illustrated, showing how installation time and costs are greatly reduced. *Federal Electric Products Co.*

**For free copy insert No. 32 on postcard, p. 37.**

## One-unit substation

Application of the CSP power transformer as a completely packaged, single-feeder substation is described in a new 16-p. booklet that tells how combining the 43 components of a conventional substation into a single unit saves both time and

# *publications*

*Continued*

money. An illustrated discussion is included on the type URS tap changer equipment, the automatic overload and short-circuit protection, the readily accessible instrumentation and instrument transformers, and the De-ion low-voltage switching. *Westinghouse Electric Corp.*

**For free copy insert No. 33 on postcard, p. 37.**

## *Automatic processing*

A timely and practical exposition of some of the more advanced machine design elements involved in continuous coating equipment for such web materials as textiles, papers, films and foils, and strand materials such as wires, cables and synthetic monofilaments, is contained in a new 16-p. booklet. It discusses various types of complete coating systems and the many different component elements they embrace. *Industrial Ovens, Inc.*

**For free copy insert No. 34 on postcard, p. 37.**

## *Pipe tool guide*

The new Beaver operating guide to assure users the best possible results from portable pipe and bolt machines and hand pipe tools takes the form of a 4-p. folder illustrating and telling how to locate and correct pipe machine and hand pipe tools troubles. Thirty-one different operations are covered. Cutting, how to use driven geared tools, reaming, operation of oil pump, electrical data and care of dies are some of the subjects in the informative guide. *Beaver Pipe Tools, Inc.*

**For free copy insert No. 35 on postcard, p. 37.**

## *Welder's protection*

A 4-p. circular on protective equipment for welders describes and illustrates a wide range of eye protective devices for both gas and arc welding, and includes product information on respiratory protection for welders. Accessories such as rubber mask padding for goggles, and the Weld-Aid lens for welders who wear bifocal glasses are also described. *Willson Products, Inc.*

**For free copy insert No. 36 on postcard, p. 37.**

*Resume Your Reading on Page 38*


## ANOTHER UDYLITE CONTRIBUTION TO LOWER PLATING COSTS...

Here's your answer to the increasing production costs in electro-plating—the new Udylite Automatic Loader & Unloader. This completely automatic hydraulic unit provides a vital link in the processing and metal finishing chain. The Loader conveys work racks automatically from the racking station to the plating machine and loads the racks on the plating unit mechanically—eliminating the labor ordinarily required for transporting work, loading and unloading.

Consider *all* these advantages:

**1**—The Udylite Loader can be used on a large machine or it can be used as an intermediary between two small machines where the plating cycle is split.

**2**—It can be added to an existing automatic plating machine in the field or it can be ordered as optional equipment on a new machine.

**3**—Although the Loader is hydraulically-driven, it can be used with either hydraulic or air-operated plating machines.

**4**—Plating machines equipped with the Loader can be operated independently, since a separate hydraulic circuit is built into each Loader.

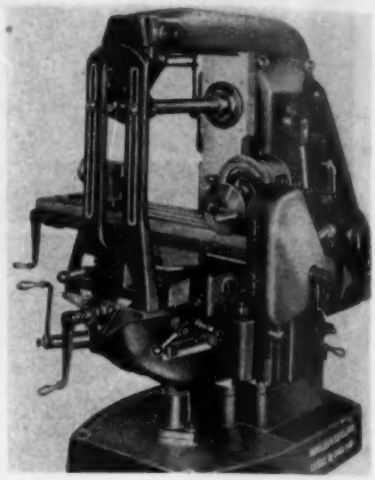
Let your nearby Udylite Technical Man give you the complete story about this new Udylite development to *Better Your Way of Plating*. Call him today or write direct to *The Udylite Corporation, Detroit 11, Michigan*. There's no obligation.

PIONEER OF A BETTER WAY IN PLATING

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

# *new equipment*

*Continued from Page 40*



## Universal mill

With accuracy guaranteed within limits of 0.001 in. in 12 in., the Richmond No. 03 SD milling machine manufactured by Midgley & Sutcliffe Ltd. of England is a low priced toolroom or production machine made to rigid specifications. The drive is from a 3 hp, four speed ac motor, to American standards. Eight spindle speeds ranging from 44 to 800 rpm are obtained by back gearing. Automatic feed is provided to the table and cross traverses in either direction. Six rates of feed for each spindle speed are obtained through a three speed feed box. The table swivels 45° each side of center. Spindle and gearing are made of high grade alloy steel. *British Industries Corp.*

**For more data insert No. 12 on postcard, p. 37.**

## Expansion bellows

Expansion-type bellows for the absorption of high frequency vibration and lineal expansion in many types of equipment are constructed of convoluted metal diaphragms welded into complete units. They are available in sizes from 1 to 5 in. ID in various lengths and manufactured in plain and stainless steels, brass, bronze, Monel and Inconel according to individual heat, pressure and corrosion requirements. *Titeflex, Inc.*

**For more data insert No. 13 on postcard, p. 37.**

## Black oxide process

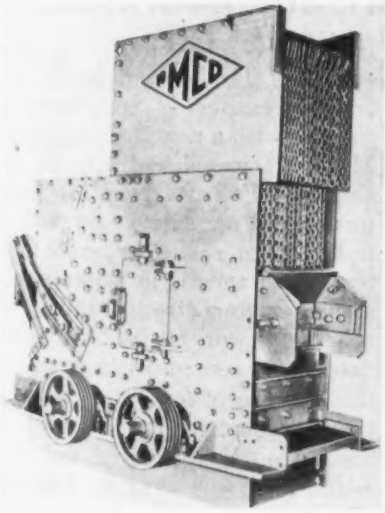
A new process for blackening iron and steel, known as Black Magic (Type A), is a one bath-one salt process that operates at 290°F. It requires 6½ lb of Black Magic salts per gal of blackening solution. The solution is highly fluid resulting in a minimum of loss from drag-out. Black Magic is said to cut down the blackening time cycle, provide a finish of high corrosion resistance, and blacken heat treated or hardened work easily. *Mitchell-Bradford Chemical Co.*

For more data insert No. 14 on postcard, p. 37.

## New type vibrator

For fast, steady movement of foundry sand and other materials stored in hoppers or bins, the Vibrolator operates with an effective all-directional vibration, moving arching materials toward the outlet without damaging hopper faces. The vibrator starts instantly without manual assistance, operates quietly, and requires virtually no maintenance. It can be mounted in various ways. *Martin Engineering Co.*

For more data insert No. 15 on postcard, p. 37.




## Impact breaker

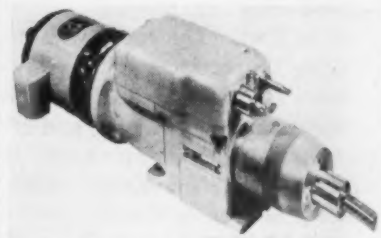
A heavy duty impact breaker, called the Impact Master, features controlled impact action, an operating principle that controls the breaking operation and directs the flow of material through the machine to produce a highly uniform gradation cubical aggregate. The machine has an outer plate steel housing

# *new equipment*

*Continued*

forming a breaking chamber over two rotor hammer members that are mounted in the base. Both rotor hammers rotate in the same direction at speeds of 550 to 1000 rpm. By controlling the in-fed rock and directing its flow, practically 100 pct of the breaking is accomplished by the rotor hammers making it possible to better control finished product size. Size of finished material is governed by the speed of the rotors, and by adjustments of a stripper bar and lower screen grate. Many types of nonabrasive and low silica content materials can be reduced. *Pettibone Mulliken Corp.*

**For more data insert No. 16 on postcard, p. 37.**



## Hydraulic drill unit

Heavy duty high production work on drilling, reaming, tapping, centering, chamfering, spot facing is possible with a new Delta drill unit. The air powered hydraulic circuit derives its thrust from the plant compressed air supply and its control from a sealed hydraulic system. The spindle is driven by an electric motor directly, through a gear train, or by V belts. The unit may be mounted in any position because of its sealed construction. Adjustments for rapid approach to the work, feed, and final depth, are grouped at the front of the unit. Feed is infinitely variable from 0 to 50 ipm. *Delta Power Tool Div. Rockwell Mfg. Co.*

**For more data insert No. 17 on postcard, p. 37.**

## Midget grinder

Precision grinding problems on small dies, castings and hard-to-get-at spots are solved by a new rotary vane air grinder that measures 4⅝ in. long x 1¼ in. wide

and weighs 12 oz. Lever or button throttles with a special collet guard allows the operator to hold the tool close to the work, permitting fingertip operation with better balance in the tightest working areas. An arbor runout within 0.0015 in. allows accurate work. Eight sizes of collets give a range of shanks from 1/64 to ¼ in. The motor is cool running and develops 26,000 rpm. *Mall Tool Co.*

For more data insert No. 18 on postcard, p. 37.

## Side-dump trailer

Two-way side dump doorless, pan type trailers for mining and quarry haulage may be dumped to either side. The body may be reversed from end to end to prevent excess wear on one side and a one bolt-attached stabilizer arm may be interchanged from side to side. Load distribution has been improved to place more load on a fifth wheel, providing better traction on the tractor axle. The TP trailer is furnished as a complete unit, with an Easton permanently coupled, rubber mounted fifth wheel, with mounting brackets and bolts. The all-welded body features new and stronger edge construction. Box section reinforcements are used throughout. *Easton Car & Construction Co.*

For more data insert No. 19 on postcard, p. 37.

## Thin electrical steel

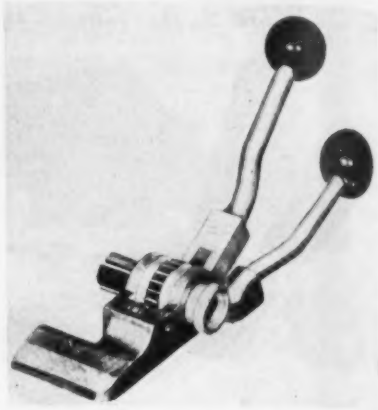
Tran-Cor T-O-S can be operated at very high inductions, 20 pct higher than nickel-iron alloy. The material is intended for use in wound-type transformers and reactors that operate at 400 cycles. It not only has a marked advantage in the low exciting current required at inductions over 16 kilogausses but also has a low core loss. Tran-Cor T-O-S is an iron-silicon alloy with a high degree of orientation obtained by

# *new equipment*

*Continued*

special processing and test-selection for high permeability requirements. It is supplied in 4-mil thicknesses and 12⅜ in. wide coils. *Armco Steel Corp.*

**For more data insert No. 20 on postcard, p. 37.**



## Strapping tool

For pulling steel strapping of ⅜, ½, ⅝ or ¾ in. tight around any size or shape object a pocket size strapping tool operates like larger Steelbinder tools except that it does not cut off surplus strap as an integral part of its binding action. Severing the surplus strap is done with a Steelbinder hammer cutter. It places no wedge between the strap and the object tied providing better control of the binding operation and a tighter tie when the tool is disengaged. *A. J. Gerrard & Co.*

**For more data insert No. 21 on postcard, p. 37.**

## Graphite anode

More pounds of graphite per unit of exposed surface gives longer life to a new 3x60-in. graphite ground anode. It is rugged enough to stand up to normal installation bumps without damage, easy to transport to the field, easy to center in the backfill and easy to tamp. It is recommended for the cathodic protection of pipe lines, refinery equipment, and underground and underwater metal structures and is furnished with 36-in. insulated No. 8 weatherproof cable. *National Carbon Co.*

**For more data insert No. 22 on postcard, p. 37.**

***Resume Your Reading on Page 41***

# IRON AGE *markets and prices*

*market briefs and bulletins*

**CMP may include autos** — Inclusion of automobile manufacture within the scope of CMP with definite material allocations loomed as a probability this week after a meeting of NPA with automotive manufacturers. Control officials told industry representatives it would accede to such recommendations if the third quarter try-out of CMP indicated the industry would be seriously crippled by having to get its steel in the "free" market.

**Apex out**—Apex Smelting Co. will not get into primary aluminum production. The government had been counting on the Chicago firm for 54,000 tons of aluminum per year but the high expense of the necessary facilities and the low ceiling price of aluminum would prevent Apex from realizing an adequate return. The government also refused any subsidy other than accelerated amortization.

**stockpiling funds**—President Truman has asked Congress for an additional $1.1 billion, of which $800 million would be new obligational authority for procurement of stockpile materials. With funds already voted, this new authority would bring stockpile funds to $5.2 billion—the original goal set at the end of the war. However, Munitions Board officials estimate unofficially that because of increased prices it will require closer to $6.5 billion to reach the quantitative goal set.

**casting prices due**—Issuance of a general castings price regulation is imminent. Edward J. Metzger, chief of the OPS castings section, said this week the new regulation would be patterned after the pre-Korea roll-backs of CPR 22 and CPR 30. He advised the industry to preserve records substantiating cost and price determination procedures.

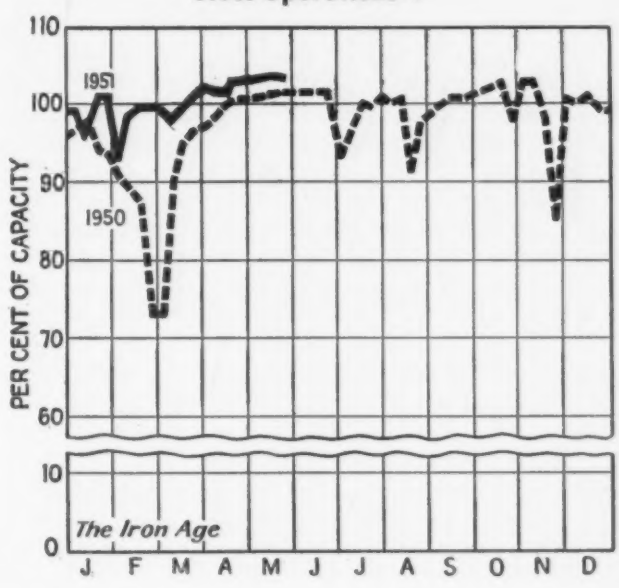
**paperwork blizzard** — The government-sponsored snowstorm of paperwork falling on businessmen is drifting to a new high for stainless producers. The requirement that all orders on the book be submitted to the government for coding, use of codes and the paperwork necessary in getting the information, presents a staggering job.

**non-essentials**—Plight of the non-essential fabricator is becoming more desperate. It is virtually impossible to obtain enough steel to keep going. Gray market steel is snapped up as fast as it materializes—and price is no object. Foreign steel helps, but is becoming less and less a factor as countries, especially England, keep steel for home use.

**furnace shutdown**—One of two blast furnaces in the Midland, Pa., works will be shut down about July 1 for relining and improvements by Crucible Steel Co. of America. Ingot production in the third quarter will dip. Crucible is now building a third blast furnace at the Midland plant as part of its defense expansion program.

**rolling trouble**—Claymont Steel Co. will take down its 120-in. sheared plate mill for repairs, according to reports heard in the trade. It will quit rolling on May 27 and will be out of production for about 6 weeks.

**Steel Operations †**




**District Operating Rates—Per Cent of Capacity †**

| Week of | Pittsburgh | Chicago | Youngstown | Philadelphia | West | Buffalo | Cleveland | Detroit | Wheeling | South | Ohio River | St. Louis | East | Aggregate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| May 13 | 97.0* | 107.0 | 94.0* | 100.5 | 107.0 | 104.0 | 97.5* | 107.0* | 101.0 | 97.0 | 95.5 | 86.5 | 125.0 | 104.0 |
| May 20 | 99.0 | 108.0 | 95.0 | 100.5 | 106.0 | 104.0 | 98.5 | 106.0 | 102.0 | 96.5 | 95.5 | 99.0 | 125.0 | 103.5 |

* Revised.
† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.

# nonferrous metals

*outlook and market activities*

## NONFERROUS METALS PRICES

| | May 16 | May 17 | May 18 | May 19 | May 21 | May 22 |
|---|---|---|---|---|---|---|
| Copper, electro, Conn. | 24.50 | 24.50 | 24.50 | 24.50 | 24.50 | 24.50 |
| Copper, Lake delivered | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 |
| Tin, Straits, New York | $1.39 | $1.39 | $1.39 | .... | $1.39 | $1.39* |
| Zinc, East St. Louis | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 |
| Lead, St. Louis | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 |

Note: Quotations are going prices.
*Tentative.

*by R.Hatschek*

**DO Quotas Lifted**—An amendment to order M-11 last week boosted the total tonnage of brass and copper which is reserved for defense purposes to 75 pct of the producer's base period. Individual products must be reserved as follows: Copper—plate, sheet and strip, 60 pct; rod, bar, wire and shapes, 90 pct; seamless tubing, 55 pct; and castings, 75 pct.

Brass—plate, sheet and strip, 75 pct; rod, bar and wire, 80 pct; Fourdrinier wire, 115 pct; seamless tubing, 50 pct; and castings, 75 pct. Standardized products—S.P.S. pipe and type B tube, 20 pct; copper water tube, 55 pct; copper refrigeration and automotive tubing, 55 pct. Beryllium copper—sheet, plate and strip, 90 pct; rod, bar and wire, 90 pct; tubing, 50 pct; and castings, 90 pct.

**Change Base Period**—The first quarter of 1951 is to be used as a base period rather than the original first half of 1950. The amendment will become effective on July 1 and will continue until the efficiency of the Controlled Materials Plan warrants its discontinuance. This will boost the current 25 pct cut in copper for civilian goods to 35 or 40 pct, according to reports.

**NPA Promises Metal**—Manly Fleischmann, National Production Authority head, has promised manufacturers of consumer durables that if they cannot procure steel, copper or aluminum under CMP they will get rations of metal. What this means is that, if the situation really gets bad, NPA will close up the open end of CMP and the government will take over all allocation responsibilities.

NPA says producers of consumer durable goods will be permitted approximately 60 pct of the copper, 50 pct of the aluminum and 70 pct of the steel that they consumed during the base period. This base is the first 6 months of last year.

**Copper Price Picture**—At press time there was still no word on who is to pay the extra 3¢ per lb for Chilean copper. As previously pointed out, it may be the government, industry or the eventual consumer. The first seems to be out, since there are no funds for the purpose. Domestic copper producers, as well as the lead and zinc men, are pressing for a higher ceiling price on the metal. They have a case, too.

Copper is copper, they say, and if Chilean metal is worth 27½¢ per lb, so is the metal mined in this country. Therefore, raise the domestic price as well. This will also be an aid to marginal operators in the U. S. and it certainly wouldn't hurt production. Converters are already paying 29¢ per lb for fast delivery of copper scrap.

**No Price Quoted**—Some of the domestic copper producers have already begun to make sales with a "price at date of delivery" clause so that they can reap the benefits of an increased price as soon as the government allows the ceiling to go up. Sellers of foreign copper are still out of the U. S. market waiting to hear news from Washington on who is to pay the extra 3¢ and whether or not Chile will be the only country to get the bonus.

**May Build Titanium Plant**—The government is considering the construction of a titanium plant, according to General Services Administrator Jess Larsen. The metal is wanted for jet parts, other aircraft applications and to lighten the foot soldier's burden in the field. At present prices and in the quantity the goverment wants, Mr. Larsen estimates a saving of $100 million if the government makes its own. This scheme is regarded by many as a step to socialism. It is a symptom of Washington "progressiveness."